BOSTON UNIVERSITY

JOURNAL OF EDUCATION

Established 1875

VOLUME 141 APRIL, 1959 NUMBER 4

Basic Needs In Health Education

LESLIE W. IRWIN

Chapter

1. Introduction 2
2. The Need for Health Teaching 6
3. Some Basic Problems in Health Teaching 13
4. Relationship of Health and Safety Education 20
5. Health Education in the Elementary School 27
6. Health Education in the High School 30
7. Health Education of the Elementary School Teacher . . . 35
8. Appendix 39
9. Bibliography 75

Published four times a year (October, December, February, and April) by Boston University School of Education, 332 Bay State Road, Boston 15, Massachusetts. Subscription price $3.00 a year; 2 years, $5.50. (In Canada, $3.50 a year; foreign, $4.00 a year.) Single copies $1.00. Entered as second-class matter, Boston, Massachusetts, October 30, 1953. Change of address should be sent promptly, giving both the old and the new address. Copyright, 1959, Trustees of Boston University. All rights reserved.

Basic Needs In Health Education

Chapter 1

INTRODUCTION

If you were asked to make a list of the most important things in your life, likely after thought the first item you would record would be good health. There is almost unanimous agreement that optimum health is our most prized possession. This thought was expressed by Schopenhauer, a German philosopher, when he wisely remarked "The greatest of follies is to neglect one's health for any other advantage of life."[1] If good health is our most prized possession, it seems obvious then that the development and maintenance of optimum health should not be left to chance.

The idea that optimum health is one of the most important things in the life of everyone must have been in the minds of American educators following World War I when they decided that health was one of the cardinal principles of education. Following World War I strong emphasis was placed upon the development of school health including health education. Even though health was listed as one of the most important objectives of education, the development of acceptable school health programs has been slow. The education phase of school health programs, in particular, has been slow and it has been developed largely through trial and error methods.

Following World War II greater emphasis than ever before was placed upon the development of school health education. The trial-and-error methods of teaching health so evident in the schools between World War I and World War II continued for a time after World War II. However, there has been comparatively rapid progress in the development of health education during the past few years. Health teaching in schools in late years has been rapidly emerging from the more or less trial-and-error methods of the past.

The recent rapid development of health education has created an urgent need for re-examination and re-evaluation of our programs. This is needed in order to better understand the present status of school health education as well as to be prepared to take advantage of past experiences in improving health teaching if teachers are to contribute to their greatest capacity in the proper education, growth, and development of children.

Why Consider Basic Needs in Health Education?[2] Although school health programs have been growing rapidly, particularly in recent years, health

[1]Irwin, Leslie W., and Boyd, Clifford A., "A Determination of Concepts of Healthful Living and Their Relative Importance for a General Course in College Hygiene." *Research Quarterly*, Vol. *23*, No. 2, May 1952.

[2]Irwin, Leslie W., Humphry, James H., and Johnson, Warren R., *Methods and Materials in School Health Education*. The C. V. Mosby Co., St. Louis, 1956.

education has not as yet become firmly established in the school program. Health teaching in schools throughout the country varies from nothing whatever being done to excellent and satisfactory programs. Furthermore, within individual schools there is a wide variation in the extent and quality of health teaching among the various teachers.

The two main reasons why basic needs in health education should be reconsidered at this time are, first, the need for a re-examination and re-evaluation of health teaching in light of past developments, and second, the possible effects on health education of the current re-appraisal of the total education program in the schools being carried out on a nation-wide basis. The results to date of this widespread re-evaluation of education seem to indicate the need for greater emphasis particularly on the physical sciences, mathematics, and foreign languages. There is some cause for alarm concerning the future place of health education in the school program as a result of current changing emphasis in education. The reason for this alarm is that little attention is being given to health education in the national re-evaluation and reconsideration of the school program and the fact that there are some indications that health education is being eliminated from the school program to make time for more physical science, mathematics, and foreign languages. Also, there are some indications that the health education of teachers is being curtailed or entirely eliminated.

Basic Needs to Consider. The importance of health to the individual should be kept in mind at all times. To develop and maintain optimum health requires education concerning health and healthful living. The schools must be depended upon to provide the extensive education needed by the child if he is to have sufficient knowledge to help him maintain optimum health.

Some of the other basic needs that need reconsideration are:

1. There is a need for the child as well as the adult to be informed of the constant rapid advances in science, medicine, public health, and related areas. This can be assured *only* through an organized health teaching program.
2. One of the objectives of modern education is to help the child learn to participate intelligently in American democracy. The billions of dollars of taxpayers' money being spent on health each year makes it necessary that we educate the children to understand the issues involved in order to be intelligent voters in this area.
3. Casual observation of the gullibility of the American public in spending millions of dollars on patent medicines and drugs as well as on harmful health practices indicates the need for better education of both children and adults.
4. The ever-growing number of both children and adults who are neurotic about their health shows the need for better education.
5. Scientific studies concerning health misconceptions show, beyond question of a doubt, that there should be carefully organized health teaching programs in the schools at all levels.

The Value of Health Teaching.[3] There is a need for a reconsideration of the value of health teaching in the schools on the basis of past experience. This is needed because it is considered necessary to help the child form the proper health habits, practices, and appreciations through health teaching. The formation of proper habits and attitudes following teaching in the past has not always followed. There are many and varying circumstances which influence the teaching-habit-attitude formation cycle.

The Scope of Health Education. The trial-and-error period of health teaching in the schools has raised the question of the extent and scope of health teaching. There are many questions concerning the scope of health teaching in both elementary and high schools. In many cases there has been considerable repetition of health content from one grade to another. This has gone to the point, in some cases, of conditioning children against any type of health teaching because of the unsatisfactory nature of it. Considerable thought needs to be given to this phase of health education.

Relationship of Health and Safety Education.[4] The fact that accidents take the lives of more children of school age than any other single cause shows the need for teaching in the area of safety education. Because many phases of health and safety are closely related and inseparable, it is usually thought best to combine the teaching of the two in the school program. Furthermore, in most schools there is insufficient time to include each separately. Because the proper relationship between health and safety education has never been clearly determined, there is a need to give further thought to the development of teaching materials in these related areas.

Health Education in the Elementary School. Although health teaching programs have greatly improved in elementary schools in recent years, there is still a need for a reconsideration of many phases of the program. The various methods to be used in teaching health as well as the gradation of health and safety materials need reconsideration. Some attention should be given to more objective means of selecting from the wealth of source materials available.

Health Education in the High School. Since the high school provides the last opportunity for an *organized* health instruction program for a majority of the students, there is a need for a consideration of the health teaching program as a terminal factor. Health teaching in the high school varies greatly from one school to another throughout the country. There is no uniform way of organizing health instruction as yet developed. Because of the many different types of experiences in teaching health in the high school, there is a need to reconsider and crystallize our experiences in planning for future health teaching at this level.

Health Education of the Elementary School Teacher. It is now generally agreed that the elementary school classroom teacher must be responsible

---

[3]Irwin, Leslie W., *"The Importance and Place of Health Instruction in the School Program," American Council on Education Studies: A Report of the Sixteenth Education Conference, Series I*, Vol. XVI, No. 3, April 1952.

[4]Irwin, Leslie W., *The Curriculum in Health and Physical Education.* The C. V. Mosby Co., St. Louis, 1951.

for health teaching in most schools throughout the country.[5] If the elementary school teacher does not assume responsibility for health teaching, it is not likely to be done, for there is no one capable of teaching elementary school children in a majority of the schools of the United States other than the classroom teacher. If elementary school teachers are to help children overcome their misconceptions and give them the positive health information they should have, naturally they should be well prepared in this area. There is some cause for concern recently due to the fact that the health education of teachers seems to be being curtailed and eliminated due to the pressure of including more physical science, mathematics, and foreign languages.

---

[5]Brammel, Roy P., "Problems Confronting Elementary Teachers." *Journal of School Health*, Vol. XXVI, No. 9, November 1956, pp. 278–280.

Chapter 2

THE NEED FOR HEALTH TEACHING

During the comparatively rapid growth of health education in the schools over the past two or three decades, many educators, medical specialists, and laymen have at times questioned the need for health teaching in the schools.[1] Although criticisms of the school health education program have gradually diminished over the years, nevertheless, they continue to some extent at the present time. Also, due to the current re-appraisal and re-evaluation of American education the questioning and criticisms are again on the increase.

Because health teaching in the schools has never been firmly established, it is necessary for those interested in developing and maintaining acceptable and desirable health programs to show clearly the need for extensive health teaching in all of the areas and levels of the school curriculum.

If there is any question in the minds of parents and educators concerning the need for extensive knowledge of health and healthful living in maintaining individual and group health, a limited amount of thought, observation, and reflection concerning the health habits, practices, mistakes, and shortcomings of the adult population particularly, should make it luminously clear that there is an urgent need for better education and understanding of health and healthful living if both individual and group health are to be improved and maintained on a basis commensurate with medical and scientific knowledge and advancement.

The Status of Health. Although rapid advancements have been made in the area of medical science, public health, and related areas in understanding the prevention of illness and death among the population, there is considerable evidence to indicate that the extent of ill health and death each year in the United States is far greater than it should be on the basis of modern advancements in science and medicine.[2] A study and consideration of the daily, monthly, and yearly statistics on a national, state, and community basis concerning illness and death bring clearly to our attention the need for greater effort on the part of the individual and group in not only reducing unnecessary illness and death, but in improving and maintaining a higher level of positive health among all segments of our population.

Advancements in Science, Medicine, and Public Health. One of the basic needs for health teaching is in preparing both children and adults not only to be informed of the advances in science, medicine and public health, but to know enough about the advances to properly evaluate and appraise

[1]Irwin, Leslie W., Humphry, James H., and Johnson, Warren R., *Methods and Materials in School Health Education.* The C. V. Mosby Co., St. Louis, 1956.

[2]American Medical Association and National Education Association, *Healthful School Living.* Washington, 1957.

them in their application to the maintenance and improvement of the health of the individual and the group.[3]

One of the greatest handicaps to the immediate application of beneficial scientific discoveries in medicine and public health has been the difficulty in educating the public to accept and act upon desirable developments.

The Maintenance of Health in American Democracy. The increasing cost of local, state, national, and international legislation pertaining to public health and medical care involving billions of dollars of taxpayers' money makes it necessary that the individual voter be able to understand the issues involved in order to participate intelligently in the democratic process.[4] In this respect the public is frequently called upon to support pending legislation sponsored by medical and public health authorities as well as politicians and others. Some modern legislation for various phases of health may be so extensive that it may tax the ability of the community, state, and nation to pay for it. Certainly, from the financial viewpoint of the taxpayer, the voting citizen must be well-informed regarding health and healthful living in the modern world. Also, laws pertaining to such things as pasteurization of milk, enforcement of sanitary regulations, maintenance of community public health departments and projects, qualifications of health and medical specialists, fluoridation of water supplies, and compulsory health insurance depends upon the knowledge and intelligence of the millions of people comprising the voting population of communities and states throughout the country.

An indication of the extent of government spending for health is given by a report of the Hoover Commission which found much waste in the federal government's medical services. It reported chaos, lack of coordination, and duplication of effort reigning among the numerous federal offices that have to do with citizen health. The Commission urged sweeping changes to cope with the problem.

The Hoover Commission declared that too many people, thirty million of the nation's approximately one hundred and sixty million, are getting federal aid for medical expenses; many of them are getting more care than is necessary and the government is maintaining more facilities than it needs. The Commission recommended that a central council should be set up to coordinate the sixty-six administrative units of agencies with medical functions. It recommended stricter procedures for veterans when their disabilities did not occur in the service, elimination of present government care for merchant seamen, and the closing of twelve United States Public Health Service general hospitals.

Federal spending in the medical field has increased so much and in so many different areas in recent years that it is hard for the ordinary citizen to keep it all in focus. A recent report from the Washington office of the American Medical Association shows the trend in spending not only continuing but increasing. This study shows a steady, steep spending climb that gives no indication of leveling off. According to the American Medical Association report, twenty-two separate government agencies and depart-

[3]Anderson, C. L., *School Health Practices.* The C. V. Mosby Co., St. Louis, 1956.
[4]Irwin, Humphry, and Johnson, Op. Cit.

ments are spending a grand total of nearly three billion dollars on medical programs this year. Although this amount does not seem large when compared to the total federal budget, the gross national product, or other indexes of our expanding economy, nevertheless, in relation to expenditures by other health groups and in terms of the impact on traditional medical patterns, it is a figure of immense importance. To show the increasing trend in this direction the nearly three billion dollars to be spent this year is, for example, over three hundred forty-four million dollars more than last year's total, and 62.6 per cent more than the figure five years ago. Furthermore, the many bills before our national legislature pertaining to health and medical care which are expected to be enacted will set another new high for medical spending.

In late years there has been increasing efforts to add medical care to social security. As an example, the Forand Bill, designed to include medical care in the social security program, has the backing of very powerful groups in the United States. It is claimed by supporters of the bill that private health insurance cannot meet the needs of the aged. Inclusion of medical care in the social security program would increase the cost to taxpayers by over a billion dollars each year. Furthermore, this cost would likely grow rapidly in the future.

After consideration of the huge sums of taxpayers' money being spent by federal, local, and state governments, it is readily evident that there is a need for more health education to prepare more intelligent voters from the viewpoint of health and healthful living.

Gullibility of the Public. The total amount of money spent each year by the American public on thousands of questionable health products is impossible to determine.[8] The millions of dollars spent on unnecessary and often harmful treatments, drugs, vitamins, and patent medicines show a distinct need for better understanding of health and healthful living. Also, in the area of nutrition, food faddists and nutrition quacks are doing much harm to the public through misleading information and propaganda. Their efforts cause economic loss in wasted expenditures on food fads amounting to millions of dollars each year. What is more serious is the confusion caused in preventing the public from learning and having confidence in sound nutrition practices.

One of our great national needs both economically and healthwise is an educational program that will be effective in an economic sense and in the protection of the general health of the public. In the case of nutrition, we are now in an almost unbelievable position with a so-called surplus of foods of nutritive value and a population that is far below the economic and health level they could reach if we had an adequate education program. So far as nutrition is concerned it is not only the waste of money involved; but many of the food fads and diets lead to malnutrition, ill health, and suffering on the part of the gullible individual who follows advertising and incorrect advice which suggest the use of self-medication and faulty diets.

Food and drug administration officials of the federal government have for some time been calling for more aggressive action by the medical profession and legislators against quackery in medicine and public health.

[8]Irwin, Humphry, and Johnson, Op. Cit.

It is now recognized that quackery is one of the big public health problems of today. Medical mail frauds are at the highest level in history with millions of dollars being spent on such things as cancer cures, major disease treatments, and nutritional promotions. Although there is an urgent need to strengthen state and federal laws against quackery, there is an even greater need to properly educate both children and adults in health and healthful living to avoid the pitfalls and misconceptions they are subjected to in all types and kinds of salesmanship and advertising.

Selection of Health Services. There is a need for greater health knowledge in preparing people to make the best and most intelligent use of available health services.[6] There seems to be more or less of a direct relationship between the level of knowledge and understanding of health and healthful living and the proper use of available health services. Millions of people in communities throughout the United States are not aware of the kind and extent of health services available. Furthermore, a great many people who are to some extent aware of available health services are reluctant to take advantage of them because of a lack of knowledge and understanding concerning their importance in helping to improve and maintain the health of the individual.[7]

Tendency Toward Health Neurotics. It is generally recognized that there is a tendency for both children and adults to become over-concerned about their health. The ever-growing number of people in this category points to another need for improved health education. In this case there is a need for considerable emphasis on the proper kind and type of education provided, for it has been learned through experience, particularly by health educators, that the number of children who become over-concerned and neurotic about their health, increases almost in direct proportion to the amount and extent of unorganized and haphazard health-teaching given to both children and adults.[8]

Recent Developments in the Relationship of the Emotions and Physical Health. Although it has been vaguely known for centuries that there is a close relationship between emotional and physical health, limited use has been made of this knowledge in the maintenance of optimum health.[9]

As a result of study and research in very recent years, there is now a better understanding of the relationship of the emotions to the maintenance of good health. The rapid developments in the area of psychosomatic medicine brings to light one of the main reasons why it is so difficult for the individual to maintain optimum health under the stresses, strains, and tensions of present-day life. It is now known that a host of physical disorders are psychogenic in origin. That is, they are basically caused and brought on by the emotions. Furthermore, most illnesses which are physical in origin become highly complicated by the emotions to the point where recovery is greatly handicapped.

[6]Haag, Jessie H., *School Health Programs.* Henry Holt and Co., New York, 1958.

[7]Turner, Clair E., "Status of Health Education, National and International." *Journal of School Health*, Vol. XXVII, No. 5, May 1957, pp. 135–137.

[8]Shaw, John H., "Evaluation of the School Health Instruction Program," *American Journal of Public Health*, Vol. 47, No. 5, May 1957, pp. 582–586.

[9]Irwin, Humphry, and Johnson, Op. Cit.

Specialists skilled in the science of psychosomatic medicine state that the more knowledge and understanding the individual has about the close relationship of emotional and physical health the easier it is to maintain good health and the easier it is to help either the child or the adult to recover and regain good health following a physical disorder brought on by the emotions.[10]

Health and Safety Misconceptions. It is the challenging responsibility of educators to help children acquire concepts of healthful and safe living which are essential to or consistent with desirable behavior and the maintenance of optimum health. Educators also have the responsibility of helping children to identify and correct their acquired misconceptions pertaining to health and safety which are not consistent with behavior and practices necessary for the improvement and maintenance of healthful and safe living of the individual and the group. The accomplishment of these two tasks depends, to a great extent, on the intelligent selection and organization of subject matter and experiences by those responsible for education in the schools. Naturally, the first step in the correction of misconceptions is to determine and identify those held by the children.

A study [11,12] was made concerning the health and safety misconceptions of elementary school children. The purpose of the study was first, to construct and evaluate an instrument for determining the prevalence of certain harmful health and safety misconceptions among fifth- and sixth-grade children, and, second, to determine the prevalence of responses to this instrument which suggests the occurrence of certain harmful health and safety misconceptions among fifth- and sixth-grade children and variations of this prevalence according to grade level.

In this study misconceptions are defined as erroneous ideas, notions, or beliefs. The investigation was concerned with two kinds of misconceptions: health misconceptions and safety misconceptions. For the purpose of the study, the misconceptions are expressed in terms of declarative sentences as shown in Tables 1, 2, 3, and 4 in the Appendix.

The health misconceptions are expressed as statements pertaining to health that lack a scientific basis and are not in accord with current authoritative medical and public health thought. The safety misconceptions are expressed as statements pertaining to safety that lack a scientific basis and are not in accord with current authoritative thought in the field of safety education.

The sources utilized in determining the possible misconceptions were previous studies of health misconceptions; published books and articles pertaining to health and safety misconceptions; contributions from various students, teachers, and physicians; and press, radio, magazine, and other forms of advertising which stated or implied health misconceptions. From these sources 203 health misconceptions and 30 safety misconceptions were

[10]Dunbar, Flanders, *Psychosomatic Medicine*, Random House, New York, 1955.

[11]Dzenowagis, Joseph G., *A Determination of the Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade School Children.*" Doctorate Dissertation, School of Education, Boston University, 1953.

[12]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

compiled. Juries of experts were used to validate and evaluate the health and safety misconceptions. For the health misconceptions, ten physicians and three health educators made up the jury. In the case of the safety misconceptions, seven safety specialists served on the jury.

In making up the final instrument only those items were retained in which all members of the juries agreed were misconceptions. Of the 233 health and safety misconceptions submitted to the jury for validation and evaluation, 17 statements were deleted by one or more of the jury members as being not completely false. Consequently, there were 216 misconceptions left in the final instrument.

The final instrument was administered to 2,210 fifth-grade children and 1,881 sixth-grade children comprising the total of fifth- and sixth-grade population in six urban and suburban communities. A study of Tables 1, 2, 3, and 4 in the Appendix shows that many harmful health and safety misconceptions are very prevalent among fifth- and sixth-grade children. As a matter of fact, 50 per cent or more of the fifth-grade children subscribe to 72 of the 216 harmful health and safety misconceptions and 50 per cent or more of the sixth-grade children subscribe to 69 of the 216 harmful health and safety misconceptions.

An interesting result of the study is that variations in the prevalence of certain harmful health and safety misconceptions exist. That is, 85 of the 216 harmful health and safety misconceptions increased in prevalence from the fifth to the sixth grade. The percentage increase of the prevalence of these 85 misconceptions range from one per cent to 16 per cent. This would seem to indicate that forces in society exist which tend to increase the misconceptions among children at all age levels. On the other hand, 122 of the 216 harmful health and safety misconceptions showed a decrease in prevalence from the fifth to the sixth grade. The percentage decrease of the prevalence of these 122 harmful health and safety misconceptions ranges from one per cent to 23 per cent. Nine harmful health and safety misconceptions showed no change in prevalence between the fifth and sixth grades.

As an example of the harmful health and safety misconceptions held by fifth-grade children, the following statements in which 50 per cent or more of them subscribed to are taken from Tables 1, 2, 3, and 4 in the Appendix:

1. The best way to get a tan is by sleeping in the sun.
2. There are some pills that people can take which will cure the common cold.
3. It is always impossible for a person with cramps to swim.
4. There are certain cough medicines that will cure and prevent the common cold.
5. Spring water that is clear and cold is always safe for drinking.
6. Most fat people are very healthy.
7. If you have any disease or sickness you will always feel some pain.
8. All people with rosy complexions are very healthy.
9. Every disease needs a drug or medicine for its cure.
10. Any food that does not smell or taste spoiled is safe to eat.

11. Iodine is the best treatment for wounds caused by stepping on rusty nails.
12. All radio advertising about what is good or bad for your health is true.
13. It is always safe to drink water which has just been taken from a well or spring.
14. People should walk on the right-hand side of the road if there are no sidewalks.
15. A good safety rule for bicycle riders is ride on the sidewalk as much as possible.
16. All advertising on television about what is good or bad for health is true.

The recommendations on the basis of the study are that fifth- and sixth-grade teachers should identify the harmful health and safety misconceptions subscribed to by their pupils as a partial basis for the selection and organization of subject matter and experiences in the area of health and safety and that health and safety instruction in the fifth and sixth grades should be partially graded from year to year on the basis of the variations of the prevalence of harmful health and safety misconceptions.

There is some evidence to indicate that health and safety misconceptions are widespread among high school students. A study[13] of the health and safety misconceptions of a group of tenth-grade girls was carried out similar to the study done with fifth- and sixth-grade children as reported by Dzenowagis.[14] The same instrument containing 216 health and safety misconceptions as used in the study of the fifth- and sixth-grade children was administered to the 250 tenth-grade girls. The results of the study show that these tenth-grade girls subscribe to many harmful health and safety misconceptions. Twenty-five per cent or more of the tenth-grade girls subscribed to 111 harmful health and safety misconceptions. Tables 5, 6, 7, and 8 in the Appendix show the prevalence of certain extremely harmful, very harmful, moderately harmful, and slightly harmful health and safety misconceptions among the 250 tenth-grade girls. Recommendations on the basis of the results of the study are that teachers of health and safety should determine the harmful health and safety misconceptions subscribed to by their students as a partial basis for the selection and organization of subject matter and experiences in the area of health and safety and that the prevalence of harmful health and safety misconceptions among pupils of other grade levels should be determined.

Sufficient research has been conducted in the area of health and safety misconceptions to show, beyond question of doubt, that there is an urgent need for carefully controlled and well-organized health instruction programs in our schools.

---

[13]Dzenowagis, Joseph G., McPherson, Patricia V., and Irwin, Leslie W., "Harmful Health and Safety Misconceptions." *Journal of School Health*, Vol. 24, No. 9, November 1954.

[14]Dzenowagis, Joseph G., Op. Cit.

Chapter 3

SOME BASIC PROBLEMS IN HEALTH TEACHING

There are a number of unique problems in health education that need special thought and consideration.

The Need for Health Education in the Formation of Habits, Attitudes and Practices. Most educators and parents agree that there is a need for children to form the correct habits, attitudes, and practices concerning health and healthful living.[1] Although children may be helped to form the proper habits, attitudes, and practices through example set by those with whom they come in contact, it is usually considered necessary to educate children in health as a fundamental part of the process.

One of the most difficult phases of the health education program is in getting children to form acceptable health habits, attitudes, and practices. When health teaching first began in the schools many years ago it was thought that children would immediately form the proper habits and attitudes as a result of teaching. Unfortunately, this has not always been true.[2]

Much of health teaching in the past has been on a trial-and-error basis which has clearly revealed the difficulty in getting proper habits and attitudes established. Consequently, there have been many criticisms of the ways, methods, and means in which health has been taught. Some educators feel that health teaching cannot be justified if pupils fail to form proper habits and attitudes immediately following teaching. However, a main purpose of health teaching is to impart knowledge regardless of whether proper attitudes and habits are immediately formed. It is granted that it is highly important to develop proper habits and attitudes, and strong emphasis should be placed on them. There is no justification, however, for withholding knowledge concerning health and healthful living from children even though the most desirable attitudes and practices are not immediately established following health teaching. There is no certain way of knowing just when pupils begin to practice desirable health habits following teaching. An example of this is that in which primary-age children are taught the importance of regularity in brushing their teeth.[3] Usually, following teaching a number of the children may soon establish a regular habit of brushing their teeth. However, some of them do not form the proper habits immediately following teaching. They all may know the reason why they should brush their teeth, yet it may be one, two, three, or more years before some of them establish regular habits. The chances are great, though, that if children never receive information

[1]Streit, W. K., "Health Education from Kindergarten through High School." *Journal of School Health*, Vol. XXIV, No. 9, November 1954, pp. 235–239.

[2]Baumgautner, Leona, "School Health — Yesterday and Tomorrow." *American Journal of Public Health*, Vol. 48, No. 6, June 1958, pp. 771–774.

[3]Irwin, Leslie W., Humphry, James H., and Johnson, Warren R., *Methods and Materials in School Health Education.* The C. V. Mosby Co., St. Louis, 1956.

regarding the brushing of teeth, they are not likely ever to form the proper habits. The native in the primitive state does not brush his teeth in the modern way. He never heard of such a thing. It is evident at once, then, that the native will never brush his teeth unless he is first taught how and is given an understanding of what civilization considers a hygienic practice.

Teachers should keep in mind that following teaching some children may start at once to put into practice the most desirable health teachings in all situations. In other cases, some children may practice health teaching a part of the time, particularly when circumstances are favorable, and in still other cases, some children may not form the most desirable practices for some time following teaching. Furthermore, some of the children may never form the proper habits regardless of the knowledge they may gain through teaching.

A very common example of attempting to get proper health habits established is that in which children are taught about nutrition in an effort to get them to form desirable habits of selecting and eating proper foods. Following teaching it can be expected that at least a few of the children will soon establish a habit of selecting the right foods at least a part of the time. All of the children may understand the reasons why they should select and eat the right foods. Yet, it may take as long as three or four years for some of the children to establish proper habits of selecting proper foods which will be evident a large percentage of the time.

One main point to be drawn from the examples cited concerning the development of proper health attitudes and habits is that if children never receive instruction in health and healthful living the chances are great that they are not likely to ever establish proper habits and attitudes. It seems to follow, then, that knowledge is primary and basic. Children must be taught about health and healthful living, otherwise there is little hope that they will ever develop the proper habits, attitudes, practices, and appreciations.[4]

The question frequently is raised as to why it is so difficult to get children to form the proper health habits and attitudes through teaching. On first thought, it would seem that with proper emphasis and motivation during teaching most of the children might form the correct practices almost at once. One main reason why it is so difficult to get immediate results is that a large part of teaching is dissipated when the children mingle in adult society. The children come in contact with adults whose attitudes are poor and who fail to observe even the most fundamental health practices. The example set by adults may tend to minimize the importance and the need for proper health habits in the minds of children. Too, the home conditions of some children are such that it is next to impossible for them to follow the teachings of healthful living.

Another factor that sometimes hinders the development of proper health attitudes and habits is that some laws and rules of health and hygiene are too rigid. There come times in the lives of all of us when it is necessary to momentarily forego what we know is the best health practice. This holds true not only for adults but for children as well. For example, if, because of some emergency situation such as illness in your family, you fail to get

[4]Willgoose, Carl E., *Health Education in the Elementary School.* W. B. Saunders Co., Philadelphia, 1959.

sufficient sleep it would perhaps be best for your health if you would take time from your daily duties to get sufficient sleep. However, in many situations it would be impossible for you to take time from your daily work to practice what you know is the best for your health. It seems evident, then, that there are times in the lives of both children and adults when it is a question of selecting and doing the best under the circumstances even though it is not the best for the health of the individual.

The Need for a Long-Term Approach to Health Teaching. Because of the adverse influence of adult society on certain phases of school health, the value of health education should be considered perhaps from the viewpoint of the length of time necessary to raise the level of health standards and practices of the population as a whole.[5] That is, the ultimate value of health teaching in the schools cannot be wholly determined on a daily, weekly, monthly, or even a yearly basis, but more likely on the basis of a generation. The health teaching carried on with the present generation of school children should raise the health standards of adult society to some extent during the next generation. Then, as each succeeding generation of children grows to maturity, the level of health standards and practices should be higher than the preceding one. In this way the school health education programs should become increasingly effective as generations pass.

Although the level of health standards and practices in future generations depends to a great extent upon the effectiveness of the present as well as future school health education programs, it should be clearly recognized that the most desirable health attitudes and practices are not likely to be established throughout society as a whole in one or even two generations regardless of the amount of time and attention given to education for both children and adults.

The Need for Improved Adult Health Education. An effective widespread program of adult education in health and healthful living is needed to make the school program more effective. Although even a minimum amount of adult health education may be helpful, the chances of establishing widespread health teaching for adults on an *organized* basis comparable to that of the schools seem somewhat remote at the present time regardless of the need. There is no way of reaching a high percentage of the adult population in an *organized* health teaching program comparable to that found in the schools. Under certain conditions it is possible to get a very small percentage of the adult population in organized health work of various kinds, but this is more often the exception rather than the rule.[6]

The present adult health education programs carried on through such mediums as television, radio, and the press, although more or less haphazard when compared to the organized methods in the schools, are somewhat helpful in raising the standards of the present adult population. These mediums, however, cannot be viewed as a means of marked advancement comparable to school health education programs. As a matter of

---

[5]Damron, Frazier C., and Boyd, Clifford A., "Improving the Elementary School Health Program." *Journal of School Health*, Vol. XXVII, No. 1, January 1957, pp. 26–29.

[6]Hartnett, Arthur L., and Shaw, John H., *Effective School Health Education.* Appleton-Century-Crofts, Inc., New York, 1959.

fact, there are some indications that adult health education by the methods ordinarily used may convey many misconceptions to the public. There is a need at the present time for very careful study and consideration of the ways, means, and methods of attempting adult health education in the United States.

The fact that it seems practically impossible at this time to reach even a small percentage of the adult population in organized instruction of any type indicates the importance of making certain that extensive and effective health education programs be conducted in the schools where it is possible to reach a large percentage of the future adult population.

The Need for a Continuous Program of Health Education. In determining the extent of health teaching in the schools, it is necessary to consider the needs of children and youth at all age levels from the kindergarten throughout the elementary, junior, and senior high schools.

There is a need to provide organized health instruction at all grade levels throughout the elementary and secondary schools.[7] There are many important reasons why it should be offered at all levels. The body of knowledge concerning health and healthful living in the modern world is so extensive that it is necessary to offer it over a period of years in order to properly impart the knowledge needed. Also, there is a need for a certain amount of health knowledge at all ages even including the kindergarten children. The level of maturity of elementary-age children is such that they cannot be given the extensive knowledge needed for adult life. Yet, it is very important that they be taught and that various phases of health and healthful living be introduced to them as rapidly as their maturity and level of intelligence will permit.

From the viewpoint of psychology it is much easier to establish proper habits and attitudes concerning health and healthful living early in the life of the child. Also, children need to form good health and safety habits just as much at an early age as later. Therefore, it seems psychologically sound to teach as much as possible about health just as early as possible. A good example of this is in the area of nutrition which is a phase of health education at practically all grade levels. The subject of nutrition should be introduced and developed as far as the maturity of the children at any particular age level permits, for nutrition is a functional part of the life of the primary child just as much as for older children. If, by educating the child in nutrition to the extent of his capacity to be educated at the primary level we can better assure his optimum nutrition throughout the growing period, then it is obvious that nutrition should be introduced just as early in school as possible. Another good example is in the area of safety. Even though primary-age children are not mature enough to be given all of the safety knowledge they need for life, nevertheless, it is highly important that they know as much about safety as possible in order to safeguard their lives during the growing period. For example, the failure to teach an elementary school child certain facts about traffic safety could result in his death or permanent disability.

---

[7]Starr, Helen M., "Today's Pupil — Health Informed or Health Educated." *Journal of Health, Physical Education and Recreation*, Vol. 25, No. 7, September 1954, pp. 18–22.

The Need for Proper Organization and Conduct of Health Teaching. If health teaching is to be most effective it must be organized and conducted on a basis comparable to other school subjects and activities. Sufficient time must be allotted to it the same as for other activities, otherwise there is little chance for it to be successful. Also, teachers should place as much emphasis on teaching health as they do other subjects. The proper preparation and presentation of health materials are highly essential to successful teaching. Two main reasons why health teaching is frequently considered unsuccessful in schools is that sufficient time is not given to it in the program and that teachers often fail to prepare to teach it as they do other subjects.

In past years many teachers have attempted to teach health entirely by incidental methods, correlation, and integration.[8] Although these methods may be helpful if they are properly employed, they should be considered only as supplementary means in teaching and establishing the proper habits, attitudes, and practices. It has been learned through experience that there must be planning such as the construction of specific health units and the preparation of lessons and presentations if the health teaching program is to be most successful.[9] Actually, it is highly questionable whether teachers should attempt any type of health teaching if it is not given full status in the program on a basis comparable to other activities and subjects. The attempts to teach health only by integration, correlation, and by incidental means have not been very successful in most schools. It has been learned through experience that the dependence on incidental means of teaching health often has had an adverse effect upon the child. An example of the adverse effect certain kinds of health teaching may have upon the child, particularly in the elementary school, is that in which a teacher attempts to teach health incidentally or as the occasion may arise. This is sometimes referred to as the opportunistic plan. Also, this may employ the integration and correlation methods. Because there is a lack of definite time and orderly presentation and preparation, the opportunistic plan is likely to resolve itself largely into preachment and nagging on the part of the teacher. The preachment and nagging may be continued at home by the parents and others. It may become so bad that almost everywhere the child turns he is warned, preached to and nagged about his failure to eat the right foods, wear his rubbers or cap, read with sufficient light, and a host of other practices the average child is prone to follow, especially if he has not had the benefit of teaching and guidance under the proper and most desirable conditions. In some cases the adverse effect upon children of this nagging and preachment process of "opportunistic education" by teachers, parents, and others is such that by the time children reach the upper grades in elementary school they are conditioned against any type of health teaching to the point where they often prefer resentfully to do just the opposite from what is taught. They frequently resent even the mention of "health." Naturally, this adverse reaction of children frequently causes them to resent any attempts to teach health.

In junior and senior high schools it has not been an unusual practice for teachers with little or no preparation to be assigned to the teaching of

[8]Oberteuffer, Delbert, *School Health Education.* Harper and Bros., New York, 1954.
[9]Turner, C. E., Sellery, C., and Smith, Louise S., *School Health and Health Education.* C. V. Mosby Co., St. Louis, 1957.

health. Also, teachers frequently are expected to teach health education courses in junior and senior high schools without study materials of any sort. Although in other areas, such as science, where school administrators and teachers would not think of attempting to teach a course without proper demonstration materials, laboratory facilities, textbooks, and reference materials, it is not uncommon at all for health teachers to be asked to teach a health course lacking in all of the essential teaching materials that would make the course successful. Attempting to teach a class in health education without the proper teaching materials practically assures in the beginning that the course cannot be successful. Results of experiences with junior and senior high school health courses taught under the proper conditions and by properly prepared teachers show, beyond question of doubt, that they are successful and that the students are highly interested in health.

Some secondary-school administrators have criticized health education on the basis that health education courses were tried in the school but that they did not prove successful. However, in practically all schools where such criticisms arise, an investigation of the conditions surrounding the way the health courses are organized and conducted is likely to show that they did not have much chance to be successful due to the failure to provide the necessary materials and properly trained teachers.

There is a need for specific health education in junior and senior high schools as well as in elementary schools. One of the best arguments in favor of direct or concentrated health courses in the secondary schools is the fact that many schools throughout the United States are conducting very successful health education courses. If, in any one particular school, health courses are unsuccessful it is likely that the things necessary to make them successful, such as equipment, study materials, and trained teachers, are not present.

The Need for Correlation and Integration in Health Education. There have been many attempts in schools to teach sufficient health materials entirely by correlation. Experience with attempting to teach health through correlation has shown that it can be only partially successful in imparting the broad and extensive knowledge needed by students for adult life.

Teaching health through correlation implies in one sense the use of other subject matter areas within the curriculum as means by which health knowledge is given. As an example, a certain amount of personal and community health can be taught in courses such as the biological sciences, general science, social science, home economics, and other related areas. In other words, some educators feel that sufficient health information is evident in these related areas to complete the necessary knowledge on the part of students. Also, there has been another approach to correlation in recent years. That is, in direct health teaching courses found in the curriculum, there have been attempts to correlate other materials such as science, home economics, and related areas in health education courses. There is a need for correlation in the school program and health education should be correlated with other subjects in a reciprocal procedure. In certain of the areas, such as the biological sciences, a certain amount of correlation with health education is evident regardless of whether it is

planned for. It remains for the teacher to place enough emphasis on the natural relationships between other subject matter and health education to make it effective. We have gained enough experience to know, however, that the broad area of health knowledge cannot be imparted entirely by correlation means. If this is attempted then there is not sufficient time left in the other subject matter areas to impart sufficient information in those areas. In other words, with all the correlation that can possibly be done with the related courses in the school curriculum, there remains a need for direct health teaching courses in order to properly educate youth in health for adult life.

One of the differences between integration and correlation is that the integration of learning experiences often center around core or group objectives. However, it should be recognized at once that the term "integration" has been used in a number of ways in its application to school programs. It is sometimes used to refer to the procedure of integrating materials within a single subject matter field. It has also been used to indicate the integration of the student as a whole. Then, too, the broader application and use of the term integration has had to do with the integration of the total school curriculum. In this sense, integration sometimes means the tendency toward the elimination of subject matter areas, as such, and their organization into a broader whole and on a problem basis. It is in this sense that teaching health through integration has been used most frequently; that is, the attempt to integrate health throughout all school areas, whether or not there are subject matter lines and division. There is a need for the integration of health throughout all school experiences. Certainly it should be planned for, the same as in other areas. However, again we have learned by experience that attempts to teach health only by integration have not been totally sufficient to impart the broad area of knowledge the student should have for adult life. Furthermore, the teaching of health by integration through such procedures as the core curriculum show that much of the teaching is left to chance and might be termed "accidental," depending upon whether in the process of studying the broader areas, problems of health will arise in sufficient numbers to give the proper amount of education and background. When plans for integrating the entire school curriculum are developed to the point where they are considered successful enough to eliminate the subject matter areas, then perhaps health education will have developed within the framework sufficiently that the health knowledge of the students can be completed entirely on an integration basis.

Chapter 4

RELATIONSHIP OF HEALTH AND SAFETY EDUCATION

The problem of safety in the United States has assumed major proportion in recent years, yet most people are not thoroughly conscious of the problem.[1]

A study of the yearly accident statistics[2] shows that approximately 100,000 men, women and children lose their lives in accidents each year in the United States. Also, approximately 330,000 people receive some type of permanently disabling injury, and approximately 10,000,000 people are injured seriously enough to be hospitalized, require medical attention, and lose time from work or school.

Basic Relationship of Health and Safety Education in the School Program. Since safety in the world of today has become such a major problem, there is an urgent need for teachers to be thoroughly aware of safety conditions and for the schools to assume greater responsibility for safety education. It is very important for both administrators and teachers to have a clear understanding of the relationship of health and safety education in the modern school program. The rapid growth and development of school health and safety education programs during the past two decades has shifted responsibilities and changed relationships very greatly in these areas. Those interested in and responsible for the optimum growth and development of children should be aware, not only of the problems in health education, but in safety and accident prevention as well.[3]

In late years the schools have accepted increasing responsibility in health education in attempting to help each child develop to his greatest possible capacity not only in academic achievement, but emotionally and physically as well. In accepting this responsibility in the area of health education, naturally some teachers and parents have attempted to do everything possible to educate the children concerning health as well as to try to help them maintain good health and to protect them from ill health and disabling diseases and disorders. It is now clearly evident that safety ranks in the same category in the attempt to assure the optimum growth and development of children. If teachers, parents, and others think in terms of protection and providing for optimum health, growth, and development of children, then they cannot fail to assume responsibility in the area of safety education the same as in health education.[4] One of the main reasons for this is the fact that more children are killed each year in accidents than by any single disease. As a matter of fact, more children are killed in accidents each year than by approximately the total nine leading childhood diseases.

[1]Stack, Herbert J., and Elkow, Duke J., *Education for Safe Living.* Prentice-Hall, Inc., New York, 1957.

[2]National Safety Council, *Accident Facts* (current yearly edition), Chicago.

[3]Irwin, Leslie W., Humphry, James H., and Johnson, Warren R., *Methods and Materials in School Health Education.* The C. V. Mosby Co., St. Louis, 1956.

[4]Irwin, Leslie W., "Analysis and Consideration of the Controversy Regarding the Responsibility for School Health Education." *Education*, October 1949.

A fundamental obligation of our democratic society is to assure and provide safe living conditions for its members. The problem of safety has grown to assume such proportions and magnitude as to challenge society in its ability to assure and provide safe living conditions for all.

Classification of Accidents. One approach to teaching safety and accident prevention is through the use of the yearly statistics dealing with accidental deaths and injuries in the United States.[5] Although the use of statistics in attempting to teach ways of reducing the accidental death and injury rate have been questioned at various times as somewhat inadequate, nevertheless, statistics showing how and where people are killed and injured are basic to an understanding of the total problem. Consequently, statistics continue to be the basis on which organized efforts are founded in education and prevention programs.

If teachers are to gain a proper understanding of the total accident situation in the United States, it is necessary to know as accurately as possible the number of people involved in accidents resulting in death, permanent disability, and disabling injuries. In order to deal with the accident problem it is important to show, also, the many accidents occurring within the activities in which human beings participate from day to day. If teachers in schools are to help reduce the number of deaths and injuries to school children, it is extremely important that they know just where and how accidents occur, not only in and about the school building and grounds, but on the way to and from school and in the home as well.[6]

The National Safety Council[7] classifies accidents into four main divisions. These four divisions have been found to be very useful in studying and classifying accident statistics for use by teachers and others interested in and working in the area of safety education. The four main or general classifications are motor vehicle accidents, home accidents, occupational accidents, and public accidents. It is obvious that the teacher must make many classifications within the four main divisions if she is to know exactly where and how accidents happen. Therefore, it is considered one of the duties of teachers and others in safety education to reclassify accidents in such a way that they will be helpful in teaching safety and accident prevention.[8]

Psychological Factors in Safety and Accident Prevention. It is generally accepted by those specializing in the field of safety and accident prevention that psychological factors are involved in most accidents.[9] Perhaps one of the most convincing indications that safety is a psychological problem may be gained from the fact that safety engineers and experts estimate that a high majority of accidents resulting in death and injury could be prevented. Of course, in order to prevent many accidents it would require the elimination of numerous hazards, but in the main it is largely a problem of individual and group attitudes and reactions. An example of this is

[5]National Safety Council, Op. Cit.

[6]Florio, A. E., and Stafford, George T., *Safety Education*, McGraw-Hill, Inc., New York, 1956.

[7]National Safety Council, Op. Cit.

[8]Higgins, Ruth, "Accident Reports: Foundation for School Safety Programs." *Safety Education*, Vol. XXXVII, No. 2, October 1957, pp. 4–5.

[9]Irwin, Humphry, and Johnson, Op. Cit.

that statistics show that only a small percentage of the motor vehicles involved in accidents have faulty mechanism. This seems to indicate that the trouble lies largely with the driver and not necessarily with the machine.

There has been a marked reduction in the number of accidental deaths and injuries during the past two or three decades in industry and occupations through supervision and removal of hazards. This is another indication that the problem is largely one of attitudes and practices, for employers have gone to great expense and trouble to be sure that all machines and working conditions are safe, yet many unnecessary accidents occur each year because of the human element involved. Even though all conceivable types of safety devices may be provided for people in building and constructing safe living and working conditions, a large percentage of the accidents that occur cannot be eliminated merely with safety machines nor with foolproof safety devices. Engineers in all fields of human endeavor have been striving to make safer conditions for the individual and the group, yet, unless the individual and the group cooperate and know how to make intelligent use of safety devices provided for them, there is not likely to be any material reduction in the present accident rate regardless of the emphasis placed on the removal of hazards.

Emotions are very important in the accident situation. More and more time and attention are being given to the study of emotions in an effort to lower the accident rate. Also, there are many physical attributes related to the problem of safety. Such things as age, race, sex, native coordination, skill, reaction time, vision, stimulation, fatigue, physical condition, and many others are directly related to the safety of both the individual and the group. Most of the physical attributes, however, are so closely related to emotional and psychological aspects that it is usually impossible to separate them as causative factors in the accident situation.

It is usually next to impossible to determine the particular mental or emotional attributes responsible in case of accidents where it is clearly evident that a mental or emotional factor is at fault. More often it is likely to be a combination of a number of mental and emotional attributes involved in a particular accident situation.

Some of the mental and emotional attributes important in safety are native intelligence, knowledge in relation to safety, judgment in relation to safety, experience, attention, memory, absentmindedness, imagination, concentration, boredom, decisiveness, worry, and mental balance.

Closely correlated with the numerous mental and physical attributes affecting safe conduct is emotional stability. Both the mental and physical attributes of the individual can be highly conducive to safety, but if the emotions are not reasonably stabilized the mental and physical qualities may be rendered ineffective particularly in situations where emotional control may be easily lost. More and more time and attention are being given to the study of emotional stability in relation to the accident situation.

Liability and Responsibility for School Accidents. There is a need for teachers to have a better understanding of their part in the safety program from a very practical viewpoint. Many teachers are not aware of their responsibility and liability for accidents to school children in the present day. In recent years there has been a marked change in the attitude of the

public concerning the accident situation in the United States. The changing attitude of the public has resulted in greater emphasis than ever before being placed on the responsibility of the school for the safety of the school child.

The risk and exposure to accidents in the schools on the part of children is greater now than ever before because of extended school programs and a wider variety of activities offered. In past years school programs were limited to a narrow curriculum which did not include some of the more hazardous types of activities offered today. Programs of physical education, athletics, recreation, industrial arts, home economics, driving training, the use of science laboratories, bus transportation, and safety patrols are some of the additions within the modern school program which increase hazards for school children.

There is a greater tendency now to attempt to hold teachers financially liable for injuries to pupils. The main reason for this is that the public has come to expect that accidents should be paid for. When an accident occurs resulting in injury to a person usually the first question asked is, "Who is to pay for the accident?"[10] The development of workmen's compensation laws in industry which place the burden of cost of accidents on the employer, the growth of liability insurance, and the trend in the present day for society as a whole, rather than the individual, to bear the cost of accidents have helped to develop the attitude that accidents should be paid for. It is only natural, then, that parents may expect to be paid in case of a school accident resulting in serious injury to a pupil.

The common law in the United States, in the absence of specific state legislation, does not grant that boards of education nor school committees can be held financially liable for accidents to school children. In other words, the school funds raised by taxation in most cases cannot be used for any purpose other than education. This leaves the teacher practically the only source through which remuneration may be gained.[11]

Teachers are becoming increasingly aware of the fact that they can be held financially liable for accidental injury to a pupil in case of negligence. The law of negligence is partly based on the theory that everyone has the right to live safely and must be protected from the negligence of others in this right. In the school situation the teacher owes a duty to the school child. In many cases the failure to act to prevent an accident to a school child might be considered negligence on the part of the teacher. The law of negligence implies, so far as the duty of the teacher to the pupil is concerned, that there must be foreseeability. That is, if the teacher is acting as a reasonably careful and prudent person she should anticipate danger or an accident. In many cases, depending on circumstances, the failure to anticipate an accident may be considered negligence by a lay jury. The question, then, is not, "Did she foresee an accident?" but, "Should she have foreseen an accident?"

In view of the trend in all areas of society to spread the costs of ill health and accidental injury, there is almost unanimous agreement that the cost

[10]Irwin, Leslie W., "The Need for Reform in Teacher Liability for Student Injuries." *Physical Educator*, Vol. II, No. 1, October 1941.

[11]Rosenfield, Harry N., "Legal Liability and Cost of Accidents." *Safety Education*, Vol. XXXVI, No. 8, April 1957, pp. 4–6.

of injuries to school children should be paid by the group rather than by the parents of the injured child. At the present time, due to the immunity of boards of education and school committees, particularly in those states which have not passed direct legislation to the contrary, there is no way the group as a whole can bear the cost of injuries to pupils. In most states, there is no legislation as yet, making it legal for school committees to spend tax-raised funds to purchase liability insurance to cover accidental injury and death to pupils.

The financial liability for injuries to school children is not the only phase of the problem. In many cases the teacher may not be vulnerable from the viewpoint of financial liability, yet she may be quite vulnerable from the viewpoint of failing to take the proper responsibility in case of an accident to a child. That is, although the teacher could not be held financially liable for the accident, nevertheless, the school administrators and school committee could hold her negligent and perhaps censor or even discharge her for failing to use reasonable care in providing safe conditions for the child.

Safety Education in the School Program. There is widespread misunderstanding concerning the need and responsibility for safety teaching in the schools. The misunderstanding seems to be due to the fact that safety education is a comparatively new area in the school program and because it has not as yet become well established in schools throughout the country.[12] A majority of teachers, particularly at the junior and senior high school level, feel that the responsibility for safety and safety education of students should be assumed by safety specialists or specialists in certain related fields such as physical education or health education. It should be kept in mind, however, that all teachers including elementary, junior, and senior high school teachers need to take certain responsibilities for the safety education and safety welfare of the school population.[13]

The Need for Safety Teaching in the Elementary School. Because of the recent public consciousness of the seriousness of the accident situation, most safety specialists, as well as many of the parents, teachers, and administrators, feel that there is an urgent need for safety teaching in the elementary school.[14] Scanning the safety statistics which show the death and injuries among both children and adults for any year is very convincing evidence of the need for a better understanding of safety and accident prevention on the part of children.

The study reported by Dzenowagis[15,16] shows that elementary school

---

[12]Wheeler, Hubert, "The School's Part in Safety for State and Nation." *Safety Education*, Vol. XXXVI, No. 3, December 1956, p. 16.

[13]Miles, James B., "The School Principal and Accident Prevention." *Safety Education*, Vol. XXXVI, No. 6, February 1957, p. 6.

[14]Leonard, Victor E., "Start Them Young." *Safety Education*, Vol. XXXV, No. 7, March, 1956.

[15]Dzenowagis, Joseph G., "A Determination of the Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Doctorate Dissertation, School of Education*, Boston University, 1953.

[16]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

children subscribe to many safety misconceptions. A study of Tables 1, 2, 3, and 4 in the Appendix shows both health and safety misconceptions. However, 29 of the 216 misconceptions listed in Tables 1, 2, 3, and 4 can be classed as strictly safety misconceptions. It should be noted in Table 1 of the Appendix showing the percentage of fifth- and sixth-grade children subscribing to *extremely* harmful health and safety misconceptions, that 22 of the 35 listed in the table are safety misconceptions. Also, it should be noted in Table 2 of the Appendix showing the percentage of fifth- and sixth-grade children subscribing to *very* harmful health and safety misconceptions that 6 of the safety misconceptions are found in this table. This means, then, that 28 of the 29 misconceptions concerning safety included in the study are classed as *extremely* harmful and *very* harmful. Furthermore, a study of the safety misconceptions listed in Tables 1 and 2 of the Appendix reveals that they are the types of misconceptions that can and often do result in death or serious injury.

A further study of Tables 1, 2, 3, and 4 in the Appendix shows that in addition to the 29 strictly safety misconceptions there are numerous other misconceptions classed as health misconceptions which are, in reality, partly safety misconceptions. Again this shows the close relationship between safety and health in the teaching program.

The classroom teachers form the nucleus for teaching safety in the elementary school.[17] The classroom teachers are the only teachers available for teaching safety in a majority of the elementary schools throughout the country. Even in the large city school system where specialized safety directors or supervisors are employed, the classroom teachers are ordinarily directly responsible for teaching safety to their pupils.

Safety Education in the High School. A logical approach to the determination of the need for safety in the high school is to give consideration to the extent of safety teaching in the elementary school. If sufficient time and attention are devoted to the teaching of safety in the grades below high school, the problem of safety education is materially simplified. Therefore, the determination of the safety program in the high school must be on the basis of the previous education of the students. Furthermore, the organization of a safety program in any high school usually must be done on an individual school basis because of the varying amounts of safety training offered in elementary schools.

It is conceivable that the need for safety education in the high school would be largely the fundamentals of safety practices. This would be true in cases where little or no safety instruction was given in the elementary school. On the other hand, students may enter high school with enough knowledge and training in safety so that a minimum of time need be devoted to safety instruction in specific situations.

Although it is entirely possible that sufficient time and attention might be devoted to safety at the elementary level to eliminate the need for a highly organized program of safety in the high school, there would remain the need for emphasizing certain types of safety that are beyond the capacity of pupils of elementary school age. Furthermore, the ideal situation wherein pupils below the high school level are brought to a high

[17]Laird, Dorothy C., "How Effective is Classroom Instruction in Safety?" *Safety Education*, Vol. XXXVIII, No. 2, February 1958, p. 49.

degree of development in safety and accident prevention seldom exists. Therefore, in a large majority of the high schools there is a definite and distinct need for a well-organized safety instruction program.[18]

The problem of organizing and conducting an effective safety program in the high school is quite different from that of the elementary school. In the elementary school, the traditional classroom teacher organization lends itself readily to the efficient conduct of an effective safety program. In the high school, teachers are largely specialized in definite fields or subjects without the more or less total responsibility for a given group of students. While the homeroom organization in the secondary school does provide, to some extent, for the teacher to assume some responsibility for a particular group, under ordinary circumstances the amount of time given to homeroom activities is insignificant to the time available in the elementary school classroom teacher organization.

Another factor that makes the secondary school problem of safety education more difficult than in the elementary school is the psychological nature of high school students. Characteristics of students of secondary-school age include their desire for adventure which at times may border on recklessness, particularly from the viewpoint of safety. Also, there is a tendency for students of high school age to ridicule restraint which is seemingly negative. Often the teaching of safety may appear to the students to be negative and inhibitive and in direct contrast to the spirit of youth in that it appears to place restraint on their natural ways of reacting to life.

For many years high schools have lagged behind elementary schools in providing a well-balanced program of safety education. However, high schools have stressed and taught safety in certain specific fields and areas. In vocational and industrial arts, for example, the teachers have stressed safety in their courses largely because of the more hazardous nature of the work. Also, for obvious reasons, safety has been stressed to some extent in science laboratories, home economics rooms, gymnasiums, swimming pools, and on the athletic field.

Experience with various methods of organizing, teaching, and presenting broader programs of safety in high schools has led to the following ways of offering curriculum material:

1. Organizing safety as a separate subject
2. Teaching safety as units included in other subjects
3. Teaching safety through the homeroom organization
4. Arranging the safety education program around pupil organizations and special projects
5. Correlating and integrating safety with many other subjects and activities
6. Combining safety teaching with health teaching

Of the various ways and methods of teaching safety in the high school, perhaps the one most highly recommended is in combining safety teaching with health teaching. However, all other methods should be used if needed in completing the education of high school students in the area of safety and accident prevention.

[18]Zahn, Willard D., "What Is a Good Safety Program?" *Safety Education*, Vol. XXXVI, No. 9, May 1957, pp. 4–7.

Chapter 5

HEALTH EDUCATION IN THE ELEMENTARY SCHOOL

There are a number of factors which influence the health teaching program in the elementary school that need consideration and clarification.

A Basis for Health Teaching. The study of health misconceptions of elementary school children by Dzenowagis[1,2] reviewed in Chapter 2 was indicated as one of the main reasons why there should be a health teaching program. A further thought on these misconceptions is that, if for no other reason than the fact that the elementary school children hold widespread misconceptions concerning health and safety, there should be a well-organized teaching program.

Although the widespread misconceptions concerning health among elementary school children is convincing evidence that schools should maintain an acceptable health teaching program, a study conducted by Merrill[3,4] shows the positive concepts of health and healthful living that health authorities think should be taught at the elementary school level. In determining the concepts of healthful living of functional value in the general education of elementary school pupils, Merrill[5] compiled a list of concepts from a number of sources including, mainly, elementary school health-education textbooks and the issues of a health magazine published by the American Medical Association. The list of health concepts was then submitted to a committee of health and medical authorities for the purpose of determining the scientific accuracy of each concept. In order to be adjudged scientifically accurate it was necessary for each concept to be consistent with current and generally accepted medical knowledge and research. A total of 305 concepts from the original list were rated satisfactory by the specialists.

The 305 scientifically validated concepts derived from the rating of the health and medical specialists were then submitted to two independent juries of health education experts in order that each concept might be rated in terms of its suitability for health education at the elementary school level. Each of the two juries consisted of five members. The specialists comprising the two juries were asked to rate each of the 305 concepts of

[1]Dzenowagis, Joseph G., *A Determination of the Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade School Children.* Doctorate Dissertation, School of Education, Boston University, 1953.

[2]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

[3]Merrill, Charles D., *A Determination of Concepts of Healthful Living which are of Functional Value in Contributing to the General Education of Elementary School Pupils.* Doctorate Dissertation, School of Education, Boston University, 1949.

[4]Irwin, Leslie W., Merrill, Charles D., and Staton, Wesley M., "Concepts of Healthful Living of Functional Value in the General Education of Elementary School Pupils." *Research Quarterly*, Vol. 24, No. 4, December 1953.

[5]Merrill, Charles D., Op. Cit.

healthful living in terms of its relative suitability for elementary school health education as delineated by a five-point scale. Suitability was determined primarily in reference to pupil needs and interests at the elementary school level. The basis of the five categories was outlined as follows:

1. Not at all suited
2. Poorly suited
3. Neither well nor poorly suited
4. Well suited
5. Ideally suited

The median score of the five ratings accorded by each individual jury to each concept was considered to best represent group appraisement in regard to teaching suitability. Median ratings of both juries for each individual concept were summed to form the basis for rank order distribution of the concepts. Thus, in the ultimate ranking the extreme values of the concepts range from two to ten. The median was chosen as the proper measure of central tendency since its reliability is generally superior to that of the mean or mode in dealing with distributions of this nature. In combining the two median scores afforded by the ratings of the two juries, a median rating of seven or above was considered to affirm concepts suitable for teaching at the elementary school level. The discrete number seven was arbitrarily established as the mark of delineation for teaching suitability since the attainment of this score depended upon a concept being rated four or well suited by one of the juries.

Table 9 in the Appendix gives the rank order of concepts by logical topical areas with those of a median rating of seven or above.

Responsibility for Health Teaching. There seems to be a question in the minds of some educators concerning the responsibility for health teaching in the elementary school. Consequently, there is a need at this time to clarify this point on the basis of experience gained during the past decade.[6]

The plan of organization in the elementary school somewhat simplifies the problem of organizing the framework for a health teaching program.[7] The usual recommendations are that classroom teachers assume the responsibility for the teaching of health. Even though there are health specialists available who might take the responsibility for teaching health in the elementary grades, it is not recommended that they do so unless the specialist has had specific training and experience in teaching elementary-school-age children. Experience has shown that the classroom teacher can have better success in teaching health to her pupils than the health specialist. This does not mean to imply, however, that health specialists lack sufficient specialized knowledge for teaching health, but rather that the classroom teacher may be more successful in teaching health if she has the proper background in health education, because she has had also the background for teaching elementary school children which the health specialist is likely to lack. In past years it was often recommended that health specialists attempt to teach health in the schools. However, experience has shown that in most cases this plan has not been successful particularly

[6]Grout, Ruth E., *Health Teaching in Schools.* W. B. Saunders Co., Philadelphia, 1958.

[7]Irwin, Leslie W., Humphry, James H., and Johnson, Warren R., *Methods and Materials in School Health Education.* The C. V. Mosby Co., St. Louis, 1956.

at the elementary school level. It does not seem to make much difference how much knowledge a person may have concerning health and healthful living if the person lacks preparation in teaching methods and does not have the background considered necessary to teach elementary-school-age children. There is no more reason why a health specialist should be required to teach health in the elementary school than a person with a doctorate degree in mathematics should be required to teach mathematics in the elementary school. The point is that the extent of knowledge to be imparted to the children is not so great or extensive that it requires such a highly specialized person.

If the classroom teacher can be more successful in teaching health to elementary school children than the health specialist, then the problem of establishing and improving health teaching in the elementary schools is one of proper preparation and education on the part of the classroom teacher.[8] The health specialist, however, can be of much assistance to the classroom teacher by acting as a consultant and in helping in various ways to properly coordinate the entire health program.

The Need for Administrative Support. The active and positive support of school administrators is needed if health education is to be most successful. The attitude and support of the elementary school principal in particular, is highly important to the success of the health teaching program. In a majority of schools the leadership, supervision, and coordination of the elementary school health education program rests largely with the principal because health specialists are not likely to be available to take the responsibility.

The Need for Coordination of the Health Teaching Program. It is extremely important that the elementary school health teaching program be well-coordinated to prevent overlapping from one grade to another. One main reason why many children become conditioned against health teaching is because of the overlapping in teaching. Overlapping usually results from a failure to place health materials on a graded and progressive basis.

The way health materials are presented in most cases is that many of the same health topics are introduced for successively advanced exploration and study at practically every grade level in the elementary school. Then, if the total school program from grade to grade is not well-coordinated, the teacher in one grade may repeat much that has been presented in the previous grade. It should be kept in mind in regard to the teaching of advanced materials in the same topical area that there is no objection to a review of the health materials presented in previous grades. When reviews of previously studied materials are presented, however, the children should clearly understand that they are merely reviews and not something supposedly being presented for the first time.

Some schools attempt to prevent overlapping by arranging health topics and units on an alternating yearly basis which is usually called the cycle plan. This plan is often used by beginning with the first grade and continuing throughout the elementary, junior, and senior high schools. Some schools using the cycle plan in which various units have been alternated on a yearly basis or on a two- or three-year basis have reported good results.

[8]Knutson, Andie L., "Evaluating Progress in Health Education." *Journal of Health, Physical Education and Recreation*, Vol. 28, No. 5, May 1957, pp. 21–22.

Chapter 6

HEALTH EDUCATION IN THE HIGH SCHOOL

As a result of research and experience in the teaching of health at the high school level during the past two decades, at least partial answers to many questions have been obtained. Many of the questionable practices concerning the organization and teaching of health need consideration and clarification on the basis of developments in recent years.

Basis for Health Teaching. The study of harmful health and safety misconceptions of high school students by Dzenowagis, McPherson, and Irwin[1] reviewed in Chapter 2 gives some indication of the need for health teaching at the high school level. As mentioned previously, there is an urgent need for health education in the high school if for no other reason than to correct the many misconceptions of students.

Although the many misconceptions of high school students, the same as elementary school pupils, show a need for health teaching, a study by Staton[2,3] shows the positive health concepts that should be taught in the secondary school.

The purpose of Staton's study was to determine objectively those fundamental concepts of health and healthful living which are of functional value in contributing to the general education of secondary school students and their relative rank order of importance. The first main step of the study was to compile a list of possible concepts. This was done through a study of health textbooks for the secondary school level and issues of a periodical published by the American Medical Association. The 736 fundamental concepts of health and healthful living derived from a study of the textbooks and periodicals then were submitted to two juries each composed of a subject matter specialist, a supervisor of health instruction, and a master teacher of health in the secondary school. These juries served as a basis for determining the relative importance of the fundamental concepts for the purpose of general education at the secondary school level.

The deductive phase of the study was concerned with the classification as either major or minor of each concept derived from the inductive phase in addition to the rating of these concepts individually in terms of their importance for general education at the secondary school level. On the basis of these classifications and ratings by the juries the resultant list of

---

[1]Dzenowagis, Joseph G., McPherson, Patricia V., and Irwin, Leslie W., "Harmful Health and Safety Misconceptions of a Group of Tenth-Grade Girls." *Journal of School Health*, Vol. 24, No. 9, November 1954.

[2]Staton, Wesley M., *A Determination of Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Secondary School Level.* Doctorate Dissertation, School of Education, Boston University, 1948.

[3]Irwin, Leslie W., and Staton, Wesley M., "A Determination of Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Secondary School Level." *Research Quarterly*, Vol. 22, No. 1, March 1951.

fundamental concepts was divided into two separate lists, one of which contained the major concepts and the other the minor concepts. Within these two lists the concepts were ranked in the descending order of their importance according to modal values of their ratings for general education.

The major list of 251 fundamental concepts is made up of those concepts of which a comprehension is necessary for optimal individual and communal healthful living. The minor list of 279 fundamental concepts is composed of those concepts which contribute to an understanding of the major concepts. The fundamental concepts contained in both lists may be considered scientifically true or in accord with current accepted knowledge and research.

As an example of the major fundamental conceptsi n this study, Table 10 in the Appendix shows 100 of the concepts which rank with the highest modal value.

Completing the Health Knowledge of High School Students. The organization and extent of health teaching in the high school is very important because a majority of the students will not have an opportunity for organized instruction of any kind after graduation. There is a need for administrators and others responsible for health teaching to be certain that the health education of the students is as complete as possible by the time they graduate from high school.[4] The plans and methods used in attempting to complete the health knowledge of students in preparing them for adult life should depend materially upon the background of health knowledge of the students when they enter high school. Tests show that students enter high school with widely varying backgrounds of knowledge in health and healthful living. It is obvious that if extensive health instruction is given in elementary and junior high schools the task of completing the health education of students in high school is materially simplified. However, at the present time a high percentage of students reach high school lacking the health knowledge they should have acquired in elementary and junior high schools.

Organization for Health Teaching. Health courses in the high school should be organized on a semester or a yearly basis. It is usually recommended on the basis of experience that at least one course be given at the ninth- or tenth-grade level and a more advanced course be given in the eleventh or twelfth grade. Some health specialists have recommended that a health education course on a yearly or semester basis be given at each grade at the high school level. Although this might be considered ideal, in most schools time has not been made available for so much health teaching. Although a few schools have offered health courses at all grade levels it is the exception rather than the rule. As a matter of fact, if a health education course is offered at the lower grades of the high school and another at the upper grades, there is no great need for health courses at all grade levels providing the students have had a satisfactory background in health in elementary and junior high schools.

One common way in which health education is organized in high schools is to allot a certain number of regular school periods each week to health

[4]Irwin, Leslie W., Humphry, James H., and Johnson, Warren R., *Methods and Materials in School Health Education.* The C. V. Mosby Co., St. Louis, 1956.

and physical education. Then, part of the time is devoted to physical education and part to health teaching. An example of this is in those schools where five class periods each week are given to health and physical education and in which two or three periods are devoted to health teaching and two or three to physical education. In cases where health and physical education are organized as a unit in this way it is usually the duty of the teacher of physical education to do the health teaching. This arrangement is sometimes satisfactory so far as the health teaching is concerned, providing the physical education teacher has sufficient background, preparation, experience, and interest in health education. In many cases, though, physical education teachers lack sufficient preparation in teaching methods of the kind necessary to conduct health classes satisfactorily and on a basis comparable to academic courses.

The plan in which health and physical education are combined is not recommended. Experience has shown that it is best to completely separate physical education from health education so far as teaching is concerned and to organize the health courses on a basis similar to the way other academic courses are conducted. Furthermore, because many physical education teachers are not qualified to teach health education and because frequently they are not interested, the health education courses are far more likely to be successful if teachers specifically prepared in health education are assigned to teach health.

There has been considerable misunderstanding concerning the qualifications of physical education teachers to teach health in past years. It should be remembered that of the more than five hundred schools in the United States preparing physical education teachers, perhaps not more than 75 of these schools properly prepare teachers to teach *both* physical education and health education. It is estimated that approximately 75 per cent of physical education teachers have neither the background nor the experience to teach health education most successfully. Some physical education teachers can teach health successfully and they are now doing so, but they are usually from the schools where they have received a background of education and training which has prepared them more adequately to teach health. However, because in a large majority of the schools the physical education teacher must teach the health courses if they are taught at all, teacher-education institutions for many years to come should try to properly prepare physical education teachers to teach health courses.

Perhaps the most satisfactory arrangement for health teaching is to have the courses taught by a health educator. In the absence of a health educator other health specialists such as physicians, nurses, science teachers, and home economics teachers may be assigned the duty of teaching health. This arrangement is not wholly satisfactory, though, because physicians and nurses, the same as many physical education teachers, usually lack proper education and training in teaching methods of the kind so necessary for conducting health classes on a basis comparable to other school subjects.

Perhaps the best solution to the problem of personnel to successfully teach health is to prepare sufficient health educators to accept the responsibility. A few health educators are now being prepared at the undergraduate level. It will be many years, though, before health educators are available

in sufficient numbers to take the responsibility for a major part of health teaching in the secondary schools.

Time Allotment for Health Education. There is a need to reconsider the minimum amount of time that should be allotted to the health education courses. A common practice is to devote one class period weekly to health teaching. Experience with this over a period of many years has shown that it is not successful in most schools. Unsuccessful attempts to teach health on a one-day-a-week basis is one reason why many school administrators have been dissatisfied with health courses. One of the main difficulties in the one meeting period per week for the health courses is that the meeting periods are so far apart that all continuity of teaching is lost from one class session to another. Under such circumstances it is very difficult for a teacher to organize and present materials on a basis comparable to other school subjects. As a result of the lack of continuity and the difficulty in organizing materials the one-period-per-week health course often turns out to be a period in which it is necessary for the teacher to try to do something to entertain the students in one way or another because it is practically impossible to do the proper kind of teaching.

Progression in Health Education. The phases of health to be included and stressed at the high school level should be in advance of the program given in the junior high school. More intensive study of basic physiology and hygiene in relation to healthful living as well as community hygiene is recommended for high school students. The physiology included in modern health education courses should be presented on a basis to prepare the students to best understand health and healthful living.

At the high school level, the same as at other levels, care should be taken to prevent overlapping of health content. The plan of arranging materials on a cycle basis is sometimes used. Ordinarily, however, it does not make too much difference at the high school level whether health materials are on a cycle basis or otherwise for usually the study is far in advance of the health content presented in the junior high school.

Size and Make-up of Health Classes. There is an urgent need to reconsider the size and make-up of health classes in many schools. In past years as well as at present it has been a practice to have extremely large health classes. This situation has ordinarily developed because the health teaching has been closely allied with physical education. For example, in many schools students from all grades in the high school may be found in one physical education class. Furthermore, the classes in physical education sometimes range as high as 150 or more students. It is evident at once, then, that a classroom instruction course cannot, under usual circumstances, be conducted successfully on such a basis. If the health teacher is expected to take the total physical education class with the mixture of students from the various grade levels on alternating days with physical education, it is readily evident that successful health teaching cannot be done under such circumstances.

Another condition that has been responsible for poor health teaching is that in which a physical education teacher attempts to teach health only on days when the weather is too inclement to be outdoors for physical

education. It is readily obvious that a teacher cannot plan the proper kind of health teaching and conduct it successfully any more in health education than could be done in other academic subjects. Such conditions would not be tolerated in other academic areas.

Health Teaching in Other Areas. In the absence of health courses some health education has been done on a limited basis in areas such as social studies, general science, home economics, biology, and other related courses. In some cases, health units have been included in other courses. Under certain circumstances health units in related courses can be successful. However, it should be realized that there is not much chance of covering the field of health education adequately by placing isolated health units in other subject matter fields. Experience with this has shown that it is practically impossible to include sufficient health materials in science instruction or other related courses to prepare the students properly for adult life. It has been shown that if a science teacher attempts to present the amount of health materials the students should have to properly complete their health knowledge he has practically no time left for teaching science.

Chapter 7

HEALTH EDUCATION OF THE ELEMENTARY SCHOOL TEACHER

Although it is impossible to consider the needs for health education of the elementary school teacher in all of their ramifications in the limited space available here, nevertheless, a few points of particular importance are presented and considered.[1]

Trends in Health Education for Teachers. In the absence of very recent objective studies of the provisions for the health education of elementary school teachers in colleges and universities, an informal check was conducted to get some indication of the trend during the past year. In some colleges preparing elementary school teachers there seems to be a trend for health education to be reduced in amount, relegated to the background, or discontinued, due to the pressure to include more physical science, foreign language, mathematics, and other subjects. Any reduction of emphasis on the extremely limited health education that has been provided for elementary school teachers in the past is regrettable particularly at a time when there is much evidence to show that elementary school children need better health education.

Status of Health Knowledge of Teachers. There are some studies reported in the literature which indicate that elementary school classroom teachers need more rather than less health education. It has been shown that elementary school children hold widespread health misconceptions. It is possible that many of the misconceptions held by children are gained from teachers as certain studies show that a substantial percentage of elementary school prospective teachers have health misconceptions. Also, it seems quite obvious that elementary school classroom teachers cannot be expected to correct the misconceptions of their pupils if they are lacking in health knowledge.

A study by Fikes[2] reports that a standardized health test consisting of 100 questions was administered to 1003 prospective and experienced teachers. The prospective teacher group included 404 students. The groups were drawn from two states. In one state the prospective elementary school teachers ranked fifth from the top among all prospective teachers taking the test. In the other state they ranked seventh from the top.

A study by Borozne[3] of the prevalence of certain harmful health mis-

---

[1]Hill, Patricia J., "Unmet Needs in Teacher Education for Health." *Journal of Health, Physical Education and Recreation*, Vol. 25, No. 1, January 1954, p. 21.

[2]Fikes, James A., "Health Knowledge of Teachers." *Journal of School Health*, Vol. 27, No. 9, November 1957, pp. 247–279.

[3]Borozne, Joseph, *A Determination of the Prevalence of Certain Harmful Health Misconceptions Among Freshman Prospective Elementary School Teachers Attending State Teachers Colleges in New England*, Doctorate Dissertation, School of Education, Boston University, 1957.

conceptions among freshman prospective elementary school teachers shows a need for better health education of teachers. The purposes of Borozne's study were, first, to construct and evaluate an instrument for determining the prevalence of certain harmful health misconceptions among prospective elementary school teachers; second, to determine the prevalence of certain harmful health misconceptions among freshman prospective elementary school teachers; and third, to determine the extent to which those prospective elementary school teachers are aware of the harmfulness of certain harmful health misconceptions.

In conducting the study a list of 295 statements, which were indicated by various sources to be health misconceptions, was compiled. Sources used to derive the health misconceptions included previous studies, published books and articles, contributions from various students, teachers, and physicians, and such forms of advertising media as newspapers, radio, television, and magazines. The refined list of 295 statements was submitted to a jury of 29 medical specialists for validation. After the administration of a preliminary study, 130 harmful health and safety misconceptions were included in the final instrument. This instrument containing 130 health misconceptions was administered to 1044 freshman prospective elementary school classroom teachers attending 17 of the 20 state teachers colleges in New England.

Table 11 in the Appendix shows the percentage of prospective teachers subscribing to each health misconception. A study of this table shows clearly the prevalence of harmful health misconceptions among prospective elementary school teachers.

The mean number of the 130 harmful health misconceptions to which they subscribe is 20.33. The per cent subscribing to each ranges from .8 to 68.1. Ten per cent or more subscribe to 72. Twenty per cent or more subscribe to the 37 which follow:

When training children one should recognize the fact that they are miniature adults and treat them accordingly.

The immediate treatment to be given for a sprain or strain should be the immersion of the affected part in hot water.

The use of lanolin restores the natural oils lost as a result of washing the hair.

Arch supports should be used by all people with flat feet.

Being massaged regularly is effective in weight reduction.

Plenty of exercise in the fresh air is the best treatment for tuberculosis.

A cancer can be arrested, but it can never be completely cured.

Wearing bathing caps or ear plugs while swimming will insure protection for the ears.

Application of butter is an effective treatment for burns.

A mouthwash is healthful because it helps kill germs in the mouth and throat.

Six-year molars are replaced with second teeth.

The best way to lose weight is by exercising.

"Feed a cold and starve a fever" is a good health rule to follow.

There are certain medicines that will prevent and cure the common cold.

The cause of overweight in most cases is lack of exercise.

There are no living germs in pasteurized milk.

Cutting or shaving a person's hair makes it grow faster and thicker.

It is a bad health habit to drink water while you exercise.

A good way to treat frostbite is to rub the frostbitten part with snow.

Persons can clean their blood by eating certain foods.

The best thing to do when your muscles are stiff is to work the stiffness out by taking further vigorous exercise.

Hot food is more nutritious than cold food.

Regular vigorous exercise increases a person's resistance to infectious diseases.

Over-exercise is a cause of heart disease.

Brushing the teeth after every meal is a sure way of stopping tooth decay.

The less you eat during hot weather the less you will feel the heat.

The main function of perspiring is to eliminate body poisons.

A daily bowel movement is always necessary for good health.

A good way to help a person get rid of the hiccoughs is to frighten him.

Chewing on bones or hard objects strengthens the teeth.

Once you stop exercising, muscle changes to fat.

A blind person has a keener sense of touch and hearing because the strength normally in the eyes has gone to other sense organs to make them more acute.

The main purpose of a dentifrice is to kill bacteria.

It is necessary for optimum health to keep the windows open in the bedroom at night.

Alcohol is a stimulant.

People with too much acid in their systems should avoid all citrus fruits.

Freezing will kill all bacteria.

A study by Boyd[4,5] shows the extent to which the average citizen should be trained in health education at the college level. Although this study is not necessarily indicative of the extent of health knowledge an elementary school classroom teacher needs, nevertheless it is basic to all health teaching.

The purpose of Boyd's study was to determine those fundamental concepts of healthful living and their relative importance as being of functional value both for the present and future in serving as a basis for a general course in health for college students. The study was organized into two main phases. One, the determination of the concepts from several different sources including textbooks, periodical and vital statistics, and two, the determination of the scientific accuracy and relative importance of each concept based on the judgment of selected national leaders in health education.

---

[4]Boyd, Clifford A., *A Determination of Concepts of Healthful Living and Their Relative Importance for a General Course in College Health.* Doctorate Dissertation, School of Education, Boston University, 1950.

[5]Irwin, Leslie W., and Boyd, Clifford A., "A Determination of Concepts of Healthful Living and Their Relative Importance for a General Course in College Hygiene." *Research Quarterly*, Vol. 23, No. 2, May 1952.

The results of the study show that there are 308 important fundamental concepts of health and healthful living that should be taught at the college level for all students.

Judging by the large number of health concepts thought necessary for the average college student, it seems logical that elementary school teachers should not only know these fundamental concepts but have health knowledge considerably beyond the average student since they are expected to teach in the health area. There are many things at present which indicate that a substantial percentage of elementary school teachers do not meet the concepts of Boyd's study.

APPENDIX

TABLE 1

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF FIFTH- AND SIXTH-GRADE CHILDREN TO CERTAIN EXTREMELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

EXTREMELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	Percentage Frequency of Responses	
	Grade 5	Grade 6
	T and ST	*T and ST*
1. The best doctors always promise to make people healthy.	73	67
2. The only good way to help a drowning person is to jump in the water to save him.	72	68
3. It is usually safe to go in swimming alone if you know how to swim.	60	45
4. Oil, grease, and gas fires should be put out with plenty of water.	57	48
5. A bullet cannot go off unless it is fired by a gun.	54	43
6. If your clothing catches fire, you should always run for water.	53	43
7. Bicycle riders should ride on the left-hand side of the road to be safe.	50	52
8. Most mental sicknesses cannot be helped by any treatment.	47	51
9. It is a good idea to make an unconscious person drink something.	42	50
10. A person having a stomach ache should usually take a laxative.	41	42
11. It is best to go to doctors who advertise in the newspapers.	40	31
12. It is impossible to cure any cancer.	40	36
13. It is all right to point a gun at someone if you are sure that it is not loaded.	39	29
14. A person always comes up to the top of the water three times before he drowns.	38	41
15. All mad dogs foam at the mouth.	37	37
16. Tuberculosis is a shameful disease to have.	35	30
17. A good way to treat a burn is to put iodine on it.	30	25

[1]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

TABLE 1—Continued

Extremely Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5	Grade 6
	T and ST	*T and ST*
18. It is safe to cross the street without looking when the traffic light is yellow and red.	29	30
19. Dynamite caps are always safe unless fastened to a fuse.	26	24
20. It is safe to cross the street without looking when the traffic light is red.	25	26
21. A person who has recovered after having tuberculosis cannot get it again.	25	20
22. Throwing oil or gasoline on a slow fire is a wise thing to do.	23	14
23. You should be ashamed if anyone in your family is mentally ill.	20	13
24. Bicycle riders do not have to obey traffic lights.	20	15
25. Unless someone in your family has tuberculosis there is no chance you will get it.	19	18
26. All laxatives are safe to use regularly.	19	22
27. Touching a light switch or light chain with wet hands is not dangerous	18	14
28. When you are riding a bicycle you never have to use hand signals.	18	12
29. It is all right to use sleeping pills without a doctor's advice.	17	15
30. If you meet a dog that frightens you, it is always best to start running.	16	8
31. It is safe to cross the street without looking when the traffic light is green.	15	9
32. People have accidents only when their "number" is up.	13	8
33. Throwing a person into deep water is a good way to teach him to swim.	12	11
34. The eyes can be made stronger by looking at the sun.	12	9
35. When you are swimming it is a good joke to call for help when you don't need it.	9	3

TABLE 2

VARIATIONS OF "TRUE" AND "SOMETIMES TRUE" RESPONSES OF FIFTH- AND SIXTH-GRADE CHILDREN TO CERTAIN VERY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

VERY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
1. The best way to get a tan is by sleeping in the sun.	80	66
2. There are some pills that people take which will cure the common cold.	79	78
3. It is always impossible for a person with cramps to swim.	75	76
4. There are certain cough medicines that will cure and prevent the common cold.	72	79
5. Spring water that is clear and cold is always safe for drinking.	72	67
6. Most fat people are very healthy.	68	69
7. If you have any disease or sickness you will always feel some pain.	67	65
8. All people with rosy complexions are very healthy.	66	68
9. Every disease needs a drug or medicine for its cure.	65	64
10. Any food that does not smell or taste spoiled is safe to eat.	60	66
11. Iodine is the best treatment for wounds caused by stepping on rusty nails.	59	67
12. All radio advertising about what is good or bad for your health is true.	59	61
13. People should walk on the right-hand side of the road if there are no sidewalks.	57	55
14. It is always safe to drink water which has just been taken from a well or spring.	57	47
15. A good safety rule for bicycle riders is: "Ride on the sidewalk as much as possible."	55	34
16. All health advertisements in papers and magazines are true.	54	57
17. All advertising on television about what is good or bad for health is true.	52	56
18. Persons can clean their blood by eating certain foods.	49	50
19. A great deal of exercise can never hurt anyone.	48	55
20. Most accidents cannot be prevented.	48	42
21. Mental illness usually happens suddenly.	48	43

[1]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

TABLE 2—Continued

Very Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
22. People who exercise a lot live longer than other people.	47	57
23. There are special laxatives that will help prevent or cure the common cold.	41	42
24. All children with heart murmurs will surely have heart trouble later on in life.	40	32
25. An exercise is not good unless it makes your muscles sore and stiff.	37	14
26. Blowing your nose as hard as you can is not harmful.	36	24
27. Most insane persons were born insane.	36	38
28. Most people who get tuberculosis will die in a short time.	34	43
29. Baby teeth need very little care because they will soon fall out.	32	28
30. Houseflies are harmless because they are unable to bite.	31	28
31. The first thing to do in treating a burn is to put cold water on it.	31	22
32. Eating meat more than once a day is harmful to most persons.	31	34
33. The best way to get water out of your ears after swimming is to hold your nose and mouth closed and blow hard.	30	22
34. Drinking raw milk fresh from the cow is a very healthy thing to do.	29	30
35. All persons should take laxatives whenever they are constipated.	25	30
36. A good way to take care of blisters is to pinch a hole in them.	25	25
37. If you feel all right, you can be sure that you do not have tuberculosis.	25	18
38. You should never eat when you are sick because you feed the disease.	24	21
39. Everyone should take a laxative once a week.	23	27
40. Fresh raw milk is a better food for your health than pasteurized milk.	23	25
41. Measles is never harmful.	22	26
42. Sickness is usually punishment for being bad.	22	19
43. It is possible to tell what is going to happen to people from their dreams.	20	36
44. You don't need to worry about having tuberculosis unless you are coughing a lot.	19	18

TABLE 2—Continued

Very Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
45. Some people should drink very little water because it turns to fat in their bodies.	19	14
46. It is safe to use toothpicks or matchsticks for removing wax from ears.	18	14
47. When tuberculosis is getting started a person always has a pain in the chest.	17	22
48. Squeezing the pus out of boils and pimples with your fingers is good for your health.	17	16
49. Whooping cough is never harmful.	17	18
50. Smart children usually die at an early age.	17	12
51. Teeth need care only when they ache.	15	9
52. The best way to remove pus from boils and pimples is with your fingers.	15	14
53. Looking into the sun can never hurt your eyes.	14	12
54. A good way to treat frostbite is to rub the frostbitten part with snow.	14	14
55. Most illnesses are caused by constipation.	14	18
56. All persons would be healthier if they ate only raw food.	14	21
57. Fat people can feel quite sure that they will never get tuberculosis.	12	11
58. Eating little or no breakfast is a good health habit for all people.	10	9
59. The best place for shelter during a thunderstorm, is under a tree.	7	6

TABLE 3

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF FIFTH- AND SIXTH-GRADE CHILDREN TO CERTAIN MODERATELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

MODERATELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
1. Brushing your teeth every day is a sure way of stopping decay.	95	97
2. Most fat people are happy and jolly.	84	80
3. Nose drops will cure a cold which is causing a stuffy nose.	81	81
4. Any person who feels all right is sure to be in good health.	72	76
5. Taking vitamin pills will guarantee you good health.	72	76
6. Wearing bathing hats or ear plugs while swimming will give a person complete protection for his ears.	71	74
7. All persons should use nose drops and mouth washes daily when they have a cold.	69	65
8. There are some pills that people can take which will prevent the common cold.	68	75
9. Wearing sunglasses will give your eyes complete protection from the sun.	68	75
10. Most persons who look thin are certain to be underweight and in poor health.	68	68
11. Taking vitamin pills is the best way to get your necessary vitamins.	67	64
12. The use of skin lotions is a healthful way to make any skin beautiful.	67	65
13. It is necessary to go to a doctor only when you feel sick.	67	52
14. Wearing eyeglasses will always make a person's eyes stronger.	65	68
15. Everyone who has weak feet should wear arch supports to strengthen them.	64	70
16. If your eyes do not hurt, you can be sure they are healthy.	64	57
17. You can be sure anything a scientist says about health is true.	63	60
18. Bad breath can be stopped for good by using special mouth washes.	62	63

[1]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

TABLE 3—Continued

Moderately Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
19. Most colds can be cured by taking vitamin pills.	62	57
20. Pain near the heart is generally a sign of heart disease.	60	62
21. Any food that smells and tastes good is safe to eat.	60	51
22. Sugar diabetes is caused by eating too much sugar.	59	64
23. A daily bowel movement is always necessary so a person can stay healthy.	59	68
24. The use of tooth powders and pastes is sure to make a person's gums firm.	59	69
25. The use of skin creams and lotions will make any skin clear and healthy.	59	58
26. The only good way to lose weight is by exercising.	58	61
27. Cotton should be the first thing put on a cut to stop the bleeding.	57	45
28. Mouth washes are sure to prevent or cure diseases of the mouth and throat.	56	59
29. The only good treatment for weak arches is to have arch supports placed in the shoes.	55	65
30. Expensive food is always the best food to eat.	54	52
31. Eating between meals causes most children to have poor health.	53	56
32. The vitamins in certain pills are better than the vitamins in natural foods.	53	57
33. Unlucky people are sure to fail at the new things that they try to do.	53	40
34. Any exercise is bad for persons who have heart trouble.	52	61
35. You can always tell if a dog is friendly by his looks.	52	40
36. The best medicines are the medicines that taste the worst.	50	56
37. A fortune teller can tell your future by looking at the lines in the palm of your hand.	48	40
38. Skipping one or two meals a day is a healthy way to get thin.	44	24
39. Some persons have the ability to tell your fortune.	44	40
40. A good way to help a person get rid of the hiccoughs is to frighten him.	44	53
41. Most persons need big muscles in order to be healthy.	43	41
42. Good doctors usually advertise.	43	41

TABLE 3—Continued

Moderately Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
43. Smoking is not harmful because many doctors and athletes smoke.	43	40
44. Most colds cannot be prevented.	41	42
45. An all-vegetable diet is the natural and best diet.	41	37
46. Persons who have pimples or boils usually have bad blood.	40	46
47. Sunburns are harmless even when they are painful.	39	33
48. Most cases of baldness can be cured if treated early.	38	40
49. Good health does not depend on what you eat.	38	41
50. Food that tastes good is usually bad for your health.	38	42
51. Nighttime is the only time that one ever needs sleep or rest.	37	32
52. It is always good for your health to eat overripe fruits.	37	31
53. Exercising regularly is a sure way to prevent disease.	36	38
54. Cancer is catching.	35	34
55. If a person wants to be strong and healthy, he should eat plenty of raw meat.	34	24
56. The best way to treat a black eye is to put a piece of raw meat on it.	33	31
57. Drinking water with your meals is always bad for your health.	33	31
58. Bananas should be kept out of a good diet because they are hard to digest.	32	33
59. The best way to brush your teeth is sideways.	32	23
60. Only bad-smelling odors can be harmful to your health.	31	26
61. All cosmetics are healthful to use.	30	30
62. All sick people should drink bottled mineral water to bring back their health.	29	26
63. Missing a bowel movement for one day is always a sign of constipation.	28	33
64. Most people who have tuberculosis were born with it.	28	29
65. People should use headache pills every time they have a cold.	28	29
66. Cheese is bad food to eat because it is hard to digest.	27	28
67. The first and best thing to do in caring for a cold is to take a laxative.	27	27
68. People can never change their food likes and dislikes.	26	28

TABLE 3—Continued

Moderately Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
69. Wanting to eat candy and sweets is always a sign that your body needs sugar.	26	24
70. A person's health depends mostly on his luck.	26	10
71. Cheese should be kept out of a good diet because it is constipating.	25	18
72. Eating fruits and vegetables at the same meal is a bad health practice.	25	24
73. All vegetables and fruits should be eaten raw.	25	22
74. It is very hard for thin persons to keep from getting tuberculosis.	24	29
75. If you are hungry most of the time, you can be sure you have a tapeworm.	24	16
76. A cold can usually be cured by eating raw onions.	24	16
77. All medicines that have alcohol in them are harmful.	23	22
78. Adding certain bath powders to the bath is a healthful way to lose weight.	22	17
79. All children with heart murmurs are sickly.	21	22
80. It is generally a good idea to have a radio in your bathroom.	21	28
81. A good health rule for all people to follow is: "Eat only the foods you like best."	20	19
82. Wearing eyeglasses will always make a person's eyes weaker.	20	19
83. A good health rule to follow is: "Feed a cold and starve a fever."	19	21
84. If you break a mirror you will have seven years of bad luck.	18	15
85. When you walk or run it is best to point your toes out toward the side.	15	11
86. A good way to treat a black eye is to press the eye with a knife handle.	12	11
87. A good way to help digest your food is to smoke a cigarette after you eat.	12	10
88. A person's future is determined by the star under which he is born.	12	10

TABLE 4

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF FIFTH- AND SIXTH-GRADE CHILDREN TO CERTAIN SLIGHTLY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

SLIGHTLY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
1. To go on a diet always means to eat less food.	80	76
2. Everyone who is on a diet is trying to lose weight.	80	74
3. Any person who sees clearly can be sure he doesn't need glasses.	80	76
4. The use of tooth powders or pastes will always cure a person's bad breath.	74	79
5. Some people are born lucky.	71	64
6. Most colds can be prevented by taking vitamin pills.	69	69
7. Men with large muscles are always healthier than men with small muscles.	68	69
8. Using a toothpick is the best way to get things from between your teeth.	67	63
9. A mouth wash is healthful because it helps kill germs in the mouth and throat.	65	73
10. There are no living germs in pasteurized milk.	58	57
11. Anyone who keeps his skin clean will never have pimples.	58	56
12. People are born with their food likes and dislikes.	50	51
13. Persons should eat only when they feel hungry.	50	42
14. A pain in your right side usually means that you have appendicitis.	49	49
15. People should protect themselves from catching cold by gargling with a mouth wash.	42	46
16. Fish is a food that is very good for the brain.	42	44
17. Cutting or shaving a person's hair makes it grow faster and thicker.	41	51
18. Honey is a good food for sweetening a sour stomach.	41	37
19. Most dogs do not remember the people who were mean to them.	41	34
20. It is a bad health habit to drink water while you exercise.	38	49
21. Bananas should be kept out of a good diet because they make people fat.	38	39

[1]Dzenowagis, Joseph G., and Irwin, Leslie W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

TABLE 4—Continued

Slightly Harmful Health and Safety Misconceptions	Percentage Frequency of Responses	
	Grade 5 *T and ST*	Grade 6 *T and ST*
22. White bread that is enriched with vitamins is a better food than whole wheat bread.	38	36
23. Milk is pasteurized to make it easy to digest.	36	29
24. Friday the Thirteenth is an unlucky day for most people.	34	43
25. Eating two or more different kinds of fruit during the same meal is a bad health practice.	32	29
26. Swallowing the seeds of fruits generally causes appendicitis.	32	34
27. Persons who open umbrellas indoors will bring themselves bad luck.	32	26
28. You will have bad luck if a black cat crosses the path in front of you.	32	26
29. Drinking milk while you are eating fish is a bad health practice.	27	23
30. A good health rule to follow is: "Do not eat fruits that have been mixed with milk."	25	22
31. Persons can always prevent pimples by eating more raw foods.	25	18
32. Sleeping on your left side is bad for your heart.	23	19
33. Baldness is usually caused by wearing hats.	18	21
34. Some houses are visited by ghosts.	7	5

TABLE 5

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF TENTH-GRADE GIRLS TO CERTAIN EXTREMELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

	EXTREMELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	*Per Cent T and ST*
1.	A person having a stomach ache should usually take a laxative.	62
2.	A person always comes up to the top of the water three times before he drowns.	54
3.	The only good way to help a drowning person is to jump into the water to save him.	54
4.	The best doctors always promise to make people healthy.	54
5.	A bullet cannot go off unless it is fired by a gun.	50
6.	All mad dogs foam at the mouth.	46
7.	Bicycle riders should ride on the left side of the road to be safe.	46
8.	It is usually safe to go swimming alone if you know how to swim.	46
9.	It is a good idea to make an unconscious person drink something.	36
10.	Most mental sicknesses cannot be helped by any treatment.	36
11.	It is impossible to cure any cancer.	30
12.	Oil, grease, and gas fires should be put out with plenty of water.	28
13.	It is best to go to doctors who advertise in the newspapers.	26
14.	It is all right to point a gun at someone if you are sure it is not loaded.	26

[1]Dzenowagis, Joseph G., McPherson, Patricia V., and Irwin, Leslie W., "Harmful Health and Safety Misconceptions of a Group of Tenth-Grade Girls." *Journal of School Health*, Vol. XXIV, No. 9, November 1954.

TABLE 6

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF TENTH-GRADE GIRLS TO CERTAIN VERY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

VERY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	*Per Cent T and ST*
1. There are certain cough medicines that will cure or prevent the common cold.	86
2. People who exercise a lot live longer than other people.	76
3. There are some pills that people can take which will cure the common cold.	72
4. It is always impossible for a person with cramps to swim.	70
5. Any food that does not smell or taste spoiled is safe to eat.	68
6. Iodine is the best treatment for wounds caused by stepping on rusty nails.	62
7. Spring water that is clear and cold is always safe for drinking.	60
8. People should walk on the right-hand side of the road if there there are no sidewalks.	60
9. If you have any disease or sickness you will always feel some pain.	58
10. All people with rosy complexions are very healthy.	58
11. Every disease needs a drug or medicine for its cure.	56
12. A great deal of exercise can never hurt anyone.	56
13. Persons can clean their blood by eating certain foods.	54
14. All radio advertising about what is good or bad for your health is true.	48
15. All persons should take laxatives whenever they are constipated.	46
16. Most people who get tuberculosis will die in a short time.	46
17. The best way to get a tan is by sleeping in the sun.	42
18. Measles is never harmful.	40
19. Mental illness usually happens suddenly.	38
20. There are special laxatives that will help prevent or cure the common cold.	36
21. All advertising on television about what is good or bad for health is true.	36
22. Most fat people are very healthy.	36
23. Most illnesses are caused by constipation.	34
24. Fresh raw milk is better food for your health than pasteurized milk.	32
25. Most accidents cannot be prevented.	32

[1]Dzenowagis, Joseph G., McPherson, Patricia V., and Irwin, Leslie W., "Harmful Health and Safety Misconceptions of a Group of Tenth-Grade Girls." *Journal of School Health*, Vol. XXIV, No. 9, November 1954.

TABLE 6—Continued

Very Harmful Health and Safety Misconceptions	*Per Cent T and ST*
26. All health advertisements in papers and magazines are true.	26
27. All children with heart murmurs will surely have heart trouble later on in life.	26
28. A good way to treat frostbite is to rub the frostbitten part with snow.	26
29. Everyone should take a laxative once a week.	26
30. A good safety rule for bicycle riders is: "Ride on the sidewalk as much as possible."	26

TABLE 7

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF TENTH-GRADE GIRLS TO CERTAIN MODERATELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

MODERATELY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	*Per Cent T and ST*
1. Brushing your teeth every day is a sure way of stopping decay.	92
2. Everyone who has weak feet should wear arch supports to strengthen them.	90
3. A daily bowel movement is always necessary so a person can stay healthy.	86
4. Nose drops will cure a cold which is causing a stuffy nose.	82
5. The only good treatment for weak arches is to have arch supports placed in the shoes.	80
6. Wearing bathing hats or ear plugs while swimming will give a person complete protection for his ears.	74
7. Sugar diabetes is caused by eating too much sugar.	72
8. Persons who have pimples or boils usually have bad blood.	68
9. All persons should use nose drops and mouth washes daily when they have a cold.	64
10. Wearing eyeglasses will always make a person's eyes stronger.	64
11. Most fat people are happy and jolly.	64
12. The best way to treat a black eye is to put a piece of raw meat on it.	62
13. The use of tooth powders and pastes is sure to make a person's gums firm.	62
14. There are some pills that people can take which will prevent the common cold.	60
15. Eating between meals causes most children to have bad health.	60
16. You can be sure anything a scientist says about health is true.	58
17. Wearing sunglasses will give your eyes complete protection from the sun.	56
18. The use of skin creams and lotions will make any skin clear and healthy.	56
19. Taking vatamin pills will guarantee you good health.	54
20. Bad breath can be stopped for good by using special mouth washes.	54
21. The use of skin lotion is a healthful way to make any skin beautiful.	54
22. Most cases of baldness can be cured if treated early.	50

[1]Dzenowagis, Joseph G., McPherson, Patricia V., and Irwin, Leslie W., "Harmful Health and Safety Misconceptions of a Group of Tenth-Grade Girls." *Journal of School Health*, Vol. XXIV, No. 9, November 1954.

TABLE 7—Continued

Moderately Harmful Health and Safety Misconceptions	*Per Cent T and ST*
23. The vitamins in certain pills are better than the vitamins in natural foods.	50
24. Most persons who look thin are certain to be underweight and in poor health.	50
25. Any exercise is bad for persons who have heart trouble.	46
26. Pain near the heart is generally a sign of heart disease.	40
27. Exercising regularly is a sure way to prevent disease.	40
28. Taking vitamin pills is the best way to get your necessary vitamins.	40
29. The only way to lose weight is by exercising.	40
30. Missing a bowel movement for one day is always a sign of constipation.	38
31. Good doctors usually advertise.	38
32. Mouth washes are sure to prevent or cure diseases of the mouth and throat.	38
33. Any person who feels all right is sure to be in good health.	38
34. Expensive food is always the best food to eat.	38
35. If your eyes do not hurt, you can be sure they are healthy.	38
36. Good health does not depend on what you eat.	36
37. Food that tastes good is usually bad for your health.	34
38. The first and best thing to do in caring for a cold is to take a laxative.	32
39. People can never change their food likes and dislikes.	32
40. A cold can usually be cured by eating raw onions.	30
41. Most colds can be cured by taking vitamin pills.	30
42. Wanting to eat candy and sweets is always a sign that your body needs sugar.	30
43. It is very hard for thin persons to keep from getting tuberculosis.	28
44. Bananas should be kept out of a good diet because they are hard to digest.	28
45. An all vegetable diet is the natural and best diet.	28
46. You can always tell if a dog is friendly by his looks.	26

TABLE 8

VARIATIONS OF THE "TRUE" AND "SOMETIMES TRUE" RESPONSES OF TENTH-GRADE GIRLS TO CERTAIN SLIGHTLY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS[1]

	SLIGHTLY HARMFUL HEALTH AND SAFETY MISCONCEPTIONS	*Per Cent T and ST*
1.	A mouth wash is healthful because it helps kill germs in the mouth and throat.	80
2.	Cutting or shaving a person's hair makes it grow faster and thicker.	76
3.	The use of tooth powder or pastes will always cure a person's bad breath.	70
4.	Most colds can be prevented by taking vitamin pills.	56
5.	Any person who sees clearly can be sure he doesn't need glasses.	56
6.	A pain in your right side usually means that you have appendicitis.	54
7.	It is a bad health habit to drink water while you exercise.	48
8.	Men with large muscles are always healthier than men with small muscles.	48
9.	Anyone who keeps his skin clean will never have pimples.	48
10.	Some people are born lucky.	46
11.	Persons can always prevent pimples by eating more raw foods.	46
12.	Everyone who is on a diet is trying to lose weight.	44
13.	There are no living germs in pasteurized milk.	40
14.	To go on a diet always means to eat less food.	40
15.	Fish is a food that is very good for the brain.	38
16.	People should protect themselves from catching cold by gargling with a mouth wash.	38
17.	People should eat only when they feel hungry.	36
18.	Friday the Thirteenth is an unlucky day for most people.	36
19.	People are born with their food likes and dislikes.	32
20.	Most dogs do not remember the people who are mean to them.	30
21.	Using a toothpick is the best way to get things from between your teeth.	28

[1]Dzenowagis, Joseph G., McPherson, Patricia V., and Irwin, Leslie W., "Harmful Health and Safety Misconceptions of a Group of Tenth-Grade Girls." *Journal of School Health*, Vol. XXIV, No. 9, November 1954.

TABLE 9

RANK ORDER OF CONCEPTS OF HEALTHFUL LIVING WHICH ARE OF FUNCTIONAL VALUE IN CONTRIBUTING TO THE GENERAL EDUCATION OF ELEMENTARY SCHOOL PUPILS[1,2]

I. HEALTHY LIVING

1. Only a healthy child can realize the maximum value from school experiences. (10)
2. Avoidance of infection is the best protection against communicable disease. (10)
3. The health of every part of the body depends on the health of the whole body. (9)
4. All living things are made up of cells. (8)
5. Proper habits of living improve the general health of the body. (8)
6. A knowledge of the body, its functions and its care gives us the groundwork for a program of healthy living. (7)
7. Poor color, flabby flesh, or skin eruptions may indicate an unhealthy condition and may be the symptoms of disease. (7)

II. GROWTH AND DEVELOPMENT

8. Children like to grow. (10)
9. Children are expected to grow within the range of a normal pattern. (10)
10. Regular gain in weight is a sign of health. (10)
11. For human beings, growing up means developing abilities as well as increasing in size. (10)
12. Sunshine is good for all growing boys and girls. (10)
13. Sickness sometimes slows growth. (10)
14. Bones become larger and stronger as the body grows. (10)
15. Rest helps children to grow. (9)
16. Growth is marked by fluctuations in pace. (8)
17. Growth is rapid at some ages and slow at others. (8)
18. Each child is an individual with his own growth and health patterns. (8)

III. SAFETY AND FIRST AID

19. Safety rules and signs are needed to protect children from accidents. (10)
20. Children who are careful are seldom hurt. (10)
21. Careful boys and girls find safe places in which to play. (10)

---

[1]Merrill, Charles D., *A Determination of Concepts of Healthful Living Which are of Functional Value in Contributing to the General Education of Elementary School Pupils.* Doctorate Dissertation, School of Education, Boston University, 1949.

[2]Irwin, Leslie W., Merrill, Charles D. and Staton, Wesley M., "Concepts of Healthful Living of Functional Value in the General Education of Elementary School Pupils." *Research Quarterly*, Vol. 24, No. 4, December 1953.

TABLE 9—Continued

22. The fire drill teaches children how to leave the school building safely in case of fire. (10)
23. The fireman teaches children to stay away from fires and matches. (10)
24. It is probably best to stay out of water for at least an hour after eating. (10)
25. Boys and girls must play carefully on the playground. (10)
26. Fires must have air or they will not burn. (10)
27. Children should always follow the safest way to and from school. (10)
28. One way to avoid accidents in the home is to keep things where they belong. (10)
29. A good swimmer always finds out whether there are any rocks or deep holes or other dangerous places to look out for in a new swimming place. (10)
30. Policemen help children on the way to school. (10)
31. Children must play safe when skating and sliding. (10)
32. Hard bumps on the head are sometimes dangerous. (10)
33. Children should stay away from strange animals. (10)
34. Children should learn to recognize poisonous plants and to avoid them. (10)
35. Cuts and scratches may be dangerous and should be cared for right away. (9)
36. Most falls come from carelessness. (8)
37. It is not safe for children to play with sharp tools or machinery. (8)
38. Nothing in a first-aid kit should be poisonous except tincture of iodine. (8)
39. Poisons should be kept where children cannot get hold of them. (8)
40. Resting when you are tired is a safety precaution because it saves the body from strain and over-fatigue. (7)
41. Bad accidents in camping are usually caused by guns, falls, fire, and water. (7)
42. A dog bite may carry rabies to children. (7)
43. A safety council helps children to prevent accidents. (6)

IV. Bacteria, Viruses, and Immunity

44. All boys and girls should at least be vaccinated against smallpox, diphtheria, tetanus, and whooping cough. (10)
45. Flies and mosquitoes may carry disease. (9)
46. Most disease-producing bacteria grow best in dark, warm, damp places. (9)
47. There is no vaccine that guarantees immunity to colds. (8)
48. The eyes, ears, nose, mouth, and skin are avenues through which germs may enter the body and cause disease. (7)

TABLE 9—Continued

V. Cleanliness

49. The school fountain must be clean and properly constructed for children. (10)
50. Animals that are not clean do not belong in the house. (10)
51. Clean hands and bodies help in guarding against disease. (10)
52. Baths with warm water and soap are necessary if the skin is to be kept in good condition. (10)
53. In order to be healthy, children must wash their hands and faces before eating and wash their hands after going to the toilet. (9)
54. A warm bath before bedtime helps children sleep. (8)
55. Children should breathe only clean, fresh air. (8)
56. The skin regulates body heat, protects tender parts beneath, and gives us our sense of touch. (8)

VI. Infectious and Parasitic Diseases

57. Colds are catching. (10)
58. Measles are catching. (10)
59. Children who cover their noses and mouths when they sneeze or cough protect others. (10)
60. Head lice are carried from one person's head to another's by hats, combs, and brushes. (10)
61. A sore throat may be the first sign of a cold or of some children's disease. (10)
62. Impetigo and scabies are communicable. (10)
63. In order to prevent the spread of colds children should cover their noses and mouths with handkerchiefs when they sneeze. (10)
64. There are three serious diseases that one need not have today because of vaccination: smallpox, diphtheria, and typhoid fever. (9)
65. Whooping cough is a dangerous disease caused by bacteria. (8)
66. Pinkeye is a catching disease caused by germs. (8)
67. A dog bite may carry rabies to children. (8)
68. Whooping cough is very catching from the first day when a person seems to have a slight cold until he stops coughing after four weeks. (8)
69. Chickenpox lesions occur as tiny water blisters that rupture easily and may cause pitting of the skin. (8)
70. Dust clogs the nose, irritates the throat, and may predispose to colds. (7)

VII. Heart and Circulation

71. Red blood cells carry oxygen to all parts of the body and white cells are guards against disease. (9)
72. The heart beats faster in children than in adults. (8)
73. A healthy heart works much better if it has sufficient rest. (8)
74. Poor circulation of the blood to the hands and feet is sometimes caused by cold weather. (7)

VIII. Dental Health

75. Good teeth are important to health. (10)
76. The dentist helps children to care for their teeth. (9)
77. Good food helps teeth to grow strong, makes them hard and solid, and is of value in preserving them. (9)
78. Poisons from decayed teeth may be carried by the blood to other parts of the body. (7)

IX. Mental Health

79. Nerve endings in the skin give the sensations of touch, heat, cold, and pain. (9)
80. Information concerning sex should be given in reply to a child's question.

X. Food and Nutrition

81. Milk is the best food for boys and girls. (10)
82. Tea and coffee are not good drinks for children. (10)
83. Water is essential to life. (10)
84. On a cold day it is best to eat a warm lunch. (10)
85. Proteins are the principal building materials of the body. (10)
86. Food should be protected from flies as they may spread disease from person to person. (10)
87. Boys and girls must eat food and drink water every day in order to maintain health and growth. (9)
88. Food and milk will keep longer if they are kept cold. (9)
89. Various foods are necessary to prevent certain diseases. (9)
90. In planning meals for a day, it is necessary to make sure that you have enough of all the food materials which the body needs for energy, building and repair, and health protection. (9)
91. The best milk comes from healthy cows. (9)
92. Fruit has a place in every meal. (9)
93. A good appetite is one sign of health. (9)
94. Healthy people like to eat. (9)
95. Sugar is a good energy food because it is digested quickly and supplies energy at once. (9)
96. It is not wise to include too much sugar in the ordinary diet because sugar satisfies the hunger and destroys the desire for other essential foods. (8)
97. Good meals include some rough food which helps eliminate waste from the digestive tube within the body. (8)
98. Cod-liver oil helps to keep boys and girls healthy and to prevent colds and rickets. (8)
99. It is usually not good to eat too much between meals. (8)
100. Only pure water is good to drink. (8)

101. Unless proper care is taken foods will spoil and become unfit to eat. (8)
102. Disease germs grow readily in milk and may cause sore throat, scarlet fever, diphtheria, or typhoid fever. (8)
103. Iron helps to give blood its red color. (8)
104. Malnutrition often causes a person to tire easily and weakens body resistance to disease. (8)
105. Raw fruits and vegetables must be washed clean before eating. (7)
106. Inside the body foods are changed into simpler forms that can be used for fuel or for the growth and repair of cells. (7)
107. The sudden loss of appetite in a normal child usually indicates acute illness.
108. Lack of sunlight may cause bones to become weak.
109. Vitamins are substances found in certain foods that are needed for health and growth. (7)

XI. Sleep and Rest

110. Children who are ill should rest in bed. (10)
111. After playing children need rest. (10)
112. The younger you are the more rest you need. (10)
113. Sleep and rest are natural ways by which the body restores its strength and power. (10)
114. The amount of sleep needed depends partly on the person's age, the amount of exercise he takes, and his general health. (10)
115. A regular hour for going to bed and getting up encourages sound sleep. (10)
116. Sleep rests every part of the body and helps it to get ready for the next day's work and play. (10)
117. Good sleeping habits will help a person to get the most out of sleeping hours. (8)
118. Children who have colds should stay in bed. (8)
119. The body builds itself up while resting. (8)
120. A rested body is better able to defend itself against harmful germs than is a tired body. (8)
121. Children need appropriate rest at different intervals. (7)
122. Children must prepare for bedtime in order to go to sleep quickly. (7)

XII. Posture and Exercise

123. The right kind of exercise trains the muscles and makes them strong. (10)
124. Play and exercise every day help the body to get rid of wastes. (10)
125. Exercise makes muscles tired and rest or sleep will help refresh them. (10)
126. Play and exercise improve the appetite and digestion. (10)

127. Swimming is an exercise which brings into play every muscle of the body. (10)
128. Proper posture allows all the body organs to do their best work. (10)
129. Good posture is one sign of health. (9)
130. The tone of the whole body is improved by exercise. (9)
131. Good posture helps children keep well and strong. (8)
132. Posture is important in building a good framework for the body. (8)
133. A good sitting position helps blood to circulate. (8)
134. Exercise increases the rate of breathing and also makes the heart beat faster. (7)

XIII. Recreation and Play

135. Recreation helps children to grow to be strong and healthy. (10)
136. In general, summer camp is a valuable experience for the average healthy child. (8)

XIV. Elimination of Wastes

137. A child should go to the toilet to get rid of wastes whenever he feels the need. (9)
138. Cereal and bread made from whole grains help people to have a bowel movement regularly. (8)
139. Wastes in the large intestines are made up of bacteria, dead cells, secretions, and the parts of food that the body cannot digest.
140. The large intestines can be trained to clear themselves of waste material without the aid of medicines. (8)
141. Perspiration keeps the body cool and carries off waste materials. (8)
142. The wastes produced by working cells are picked up by the blood and carried to the kidneys for removal. (7)

XV. Clothing

143. Warm clothes prevent heat from leaving the body. (10)
144. Clothes must be worn according to the season of the year. (10)
145. Rubbers and raincoats should be removed when indoors, because by keeping out air they do not permit adequate evaporation of sweat from the skin. (10)
146. The clothing you wear helps to keep the body at the right temperature. (9)
147. Clothes should fit the weather as well as the person wearing them. (9)
148. Wet clothes make the skin cold and may help lower resistance to sickness. (8)

XVI. Light and Air

149. Good light is essential for good reading. (9)
150. When the thermometer says 70 degrees, the air temperature is just about right. (8)
151. All living things use air in some way. (8)

152. The skin protects the body from heat and cold. (8)
153. Steady, quiet breathing shows that a person is taking air into the lungs that is needed to keep the blood stream supplied with oxygen. (8)
154. Air should usually enter the body through the nose rather than through the mouth because the nose is better equipped to prepare air for the lungs. (8)

XVII. Vision and Hearing

155. Earache is a sign of trouble and should get prompt attention. (10)
156. A person who is color blind cannot tell which things are colored green, and which are colored red. (8)

XVIII. Health Service

157. The doctor cares for children when they are ill. (10)
158. The school nurse gives children first aid and helps them with their health needs. (10)
159. Children should be vaccinated before they go to school. (10)
160. The first essential of healthy school living is to keep the classroom clean. (9)
161. A podiatrist treats simple diseases of the feet. (8)
162. The health examination is the first step in any sound health program. (8)
163. An occulist examines children's eyes and prescribes glasses. (7)
164. The American Red Cross teaches people how to give first aid. (7)
165. The sounds which come through the stethoscope tell the doctor whether or not a person's heart and lungs are working properly. (7)
166. A doctor has many special ways of finding out whether the body is as healthy as it can be. (7)

XIX. Community Health

167. Dirty garbage and manure help breed flies. (10)
168. Health officers quarantine people who are sick with certain diseases in order to prevent the spread of disease. (10)
169. A good place to live must be warm and dry. (9)
170. Good housing is necessary for good health. (8)
171. Towels and wash basins in public washrooms or other public places are sources of infection. (8)
172. The State Board of Health tests and approves food and water. (8)
173. The food inspector guards the public health by making sure that food sold in the stores is clean and fresh and carries no germs. (8)
174. Health Departments are interested in preventing and controlling communicable diseases. (8)
175. Drinking water which is not pure may cause disease. (7)

TABLE 10

FUNDAMENTAL CONCEPTS OF HEALTHFUL LIVING AND THEIR RELATIVE IMPORTANCE FOR GENERAL EDUCATION AT THE SECONDARY SCHOOL LEVEL AND THEIR MODAL VALUE[1,2]

Rank	*Modal Value*
1. The health of the individual is protected first, by proper personal hygiene; and second, by the activities of organized government in disease prevention.	5
2. The work of health departments in general consists of medical services, control of health conditions, and educational and publicity services.	5
3. The United States Public Health Service is concerned with international quarantine, medical work for certain groups, domestic quarantine and the health aspects of interstate commerce, administration of funds for health work to the states, and maintenance of the National Health Institute for extensive medical research.	5
4. The work of state departments of public health usually includes the establishment of standards for community health, conducting investigations, maintaining laboratories, maintaining hospitals, conducting statewide programs for better health, rendering first aid, and carrying on health education programs.	5
5. City health departments work to protect and maintain the health of individuals by providing medical, dental, and nursing programs, clinics for diagnostic purposes, prevention, and control of communicable diseases, maternal and child health programs, laboratory examination, health education, vital statistics, control of food and water supply, and sewage and garbage disposal.	5
6. The principal dangers of self-medication are, first, the medicine by giving temporary relief, may keep the person taking it from consulting a doctor for some serious condition which needs immediate medical attention; and second, the medicine may contain drugs to which a person is allergic, or which are dangerous or habit-forming.	5
7. It is impossible to tell what medicine a person needs, if any, until a physician has determined the nature of the trouble.	5
8. All the systems of the body are interdependent and the function of all systems is necessary to maintain life.	5
9. The organs within the various systems perform specific functions in the maintenance of life.	5

[1]Staton, Wesley M., *A Determination of Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Secondary School Level.* Doctorate Dissertation, School of Education, Boston University, 1948.

[2]Irwin, Leslie W., and Staton, Wesley M., "A Determination of Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Secondary School Level." *Research Quarterly*, Vol. 22, No. 1, March 1951.

TABLE 10—Continued

Rank	*Modal Value*
10. From its environment the body must receive food, water, and oxygen in order to insure growth and maintenance of every living body cell.	5
11. The bodily functions of digestion, secretion, excretion, respiration, protective covering, contractility, irritability, support, distribution, and reproduction are necessary for life maintenance.	5
12. The cell functions by taking in food, water, and air and giving off waste products, by carrying on digestion for the sustenance of life, and by reproducing its kind.	5
13. Like all living organisms the human body is made of living material called protoplasm.	5
14. A cell is the smallest unit of structure of which any living thing is composed.	5
15. Through the process of mitosis new cells are formed to replace worn-out cells.	5
16. The skeletal and muscular systems work closely together and function to bring about motion in different parts of the body, to give the body size and shape, and to protect delicate organs.	5
17. Involuntary muscles function automatically, and they help to carry on vital processes.	5
18. The voluntary muscles of the body are subject to conscious control.	5
19. Development and maintenance of muscles in the best condition cannot be accomplished without adequate food, rest, and exercise.	5
20. Muscle fatigue results when action is vigorous or prolonged and the blood is unable to remove lactic acid as rapidly as it is formed causing an accumulation of this substance in the cells.	5
21. The oxygen needs of the body are in proportion to the amount and extent of muscular activity.	5
22. The process of ossification requires that children have proper diet and exercise.	5
23. Skeletal defects in structure and function may result from malnutrition, disease, or injury.	5
24. Foot defects result from improperly fitting shoes, faulty habits in the use of the foot, weakened muscles due to illness or disuse, or hereditary causes.	5
25. Poor posture may be caused by hereditary traits, improper diet, lack of rest and recreation, incorrectly designed furniture, poor muscle tone, mental and emotional tensions, bad habits of sitting, standing, and lying; and physical defects such as poor eyesight, loss of hearing, or bone defects.	5
26. Posture is important because it may materially affect the physical, mental, and social well-being of the individual.	5

TABLE 10—Continued

Rank	*Modal Value*
27. The functions of the circulatory system are: (1) the transfer of foods from the digestive system to the tissues, (2) the exchange of oxygen and carbon dioxide, (3) the carrying of waste products to the kidneys, (4) the transfer of endocrine secretions from the ductless glands to the places where they are to be used, (5) the regulation of the heat of the body, and (6) to aid in the development of immunity to disease.	5
28. Through the circulatory system food and oxygen are carried to all parts of the body and waste products of the cells are removed.	5
29. Blood flows through the kidneys in the renal circulation where wastes are removed for release from the body.	5
30. Through the portal circulation the blood gives up some of its nutrients to the liver for storage and takes up waste materials.	5
31. Through the systemic circulation the blood carries nutrients and oxygen to the extremities of the body and returns carbon dioxide and other waste products.	5
32. Through the pulmonary circulation carbon dioxide and oxygen are exchanged in the lungs.	5
33. The circulatory function is carried out by the heart, the blood, and the blood vessels, in addition to the lymphatic system.	5
34. Tissue fluid, or lymph, circulating through the lymphatic vessels, takes up waste materials and bacteria and assists in providing food and oxygen for the cells.	5
35. The heart is a hollow muscular organ which pumps the blood through the blood vessels from before birth until death.	5
36. The heart rate is affected by the extent and degree of physical activity, age, sex, size of heart, and emotions.	5
37. The function of the heart is to maintain life through its action in keeping the blood flowing steadily throughout the body.	5
38. Heart disorders are frequently due to a lack of proper care in childhood and youth.	5
39. Injury to the heart during or following an infectious disease usually is caused by the poisonous effect on the heart and blood vessels of toxins produced by the germs, and by the extra work required of the heart in helping the body to overcome the infection.	5
40. Drugs which affect the heart are extremely powerful in their action and should be taken only under medical supervision.	5
41. Anemia may be caused by a lack of red corpuscles, insufficient hemoglobin in red corpuscles, hemorrhage, acute and chronic infections, or certain organic diseases.	5

TABLE 10—Continued

Rank	*Modal Value*
42. The most important function of the erythrocytes, or red cells, of the blood is that of carrying oxygen from the lungs to the body cells and the transport of carbon dioxide from the cells to the lungs.	5
43. Many of the general infections are accompanied by an increase in the number of white cells in the blood; thus, a high count of white cells indicates that infection exists somewhere in the body.	5
44. The digestive processes change raw food materials, by chemical and mechanical action, into soluble simple substances which may be used by the cells of the body.	5
45. Digestion is carried out by the organs making up the digestive tract, or alimentary canal, including the mouth, esophagus, stomach, small intestine, and the large intestine in addition to cooperating organs outside the digestive tract, including the salivary glands, pancreas, and the liver.	5
46. Digested foods are taken up by the process of absorption into the circulatory system for transportation to the cells.	5
47. Digestion is affected by the type of food eaten, emotions, fatigue, strenuous exercise immediately before or after eating, and by the sight, odor, and taste of food.	5
48. The body requires food to furnish energy for heat, movement, and thought; to help build body tissues for growth and repair; and to help in the chemical process of forming secretions necessary to regulate body functions and to protect health.	5
49. Food is utilized by the body through the metabolic processes, including digestion, absorption, assimilation, oxidation, and excretion.	5
50. The body requires, in addition to vitamins and minerals, carbohydrates and fats, for energy; proteins, for building, repair, and some energy; alkaline and acid residues, for keeping the reaction of body fluids nearly neutral; for stimulating the intestines; water, for aiding in chemical changes, elimination, temperature regulation and other body processes.	5
51. Dietary needs of the individual vary with differences in digestion and metabolism, age, sex, height and weight, area of body surface, activity, temperature of the environment, nature of clothing, and mental and physical health.	5
52. Good nutrition results from eating all the essential food elements in the amounts required for growth, energy, and health.	5
53. By proper food selection we may prevent or cure diseases and conditions caused by a lack of one or more essential food elements.	5

TABLE 10—Continued

Rank	*Modal Value*
54. A good natural complexion, good posture, firm muscles, and normal resistance to fatigue and infection are all dependent upon good nutrition.	5
55. Dietetic fads and fallacies usually have no scientific basis for justification and are often detrimental to good nutrition.	5
56. Large amounts of protein foods are needed particularly during childhood as growth and repair materials.	5
57. Vitamins in the diet are essential to life and growth and normal functioning of the body.	5
58. Insufficient vitamins in the diet may result in a lack of optimum health.	5
59. Deficiency diseases are caused by a lack of vitamins.	5
60. Proper amounts of bulky substances, or "roughage", in the diet stimulate intestinal muscles and thus aid in the elimination of waste from the large intestine.	5
61. Heat and other forms of energy in the body are developed through the oxidation of digested food in the cells.	5
62. Gaining weight may be accomplished by correcting physical defects, longer hours of sleep, a balanced program of exercise and relaxation, and the addition of more calories to the diet without increasing food bulk.	5
63. A safe and effective method of reducing weight is through the proper control of the caloric intake in the diet.	5
64. Underweight may be caused by malnutrition, illness, emotional stress, glandular disturbance, or a focal infection.	5
65. The body continually eliminates wastes through the kidneys, skin, alimentary canal, and lungs.	5
66. The liver stores materials, excretes wastes, and manufactures and secretes substances which aid in digestion and absorption.	5
67. The flow of perspiration helps to regulate body temperature and helps rid the body of wastes.	5
68. The kidneys function in filtering out a large amount of water, urea, and other salts from the blood, and pass these materials, in the form of urine, to the bladder for elimination.	5
69. Adequate intake of water helps in maintaining the proper functioning of the kidneys.	5
70. The urinary system rids the body of its soluble nitrogenous waste products.	5
71. Regular habits of elimination may be an important factor in the prevention of constipation.	5
72. Constipation may result from a lack of vitamin B or cellulose in the diet, insufficient water intake, insufficient exercise, fatigue, emotional upset, or failure to heed the impulse of defecation.	5

TABLE 10—Continued

Rank	*Modal Value*
73. The intake of water, correct diet, exercise, good muscle tone in the abdominal walls, good mental health, and attention to nervous stimuli created by the presence of feces in the colon are all factors in maintaining regularity of bowel elimination.	5
74. The use of laxatives, or cathartics, is an undesirable, artificial, and sometimes dangerous measure in dealing with constipation.	5
75. Cooperation between the organs in the body is controlled by the nervous system and secretions of the endocrine glands.	5
76. Endocrine secretions exert a profound influence on the appearance, body processes, and mental and emotional functions of individuals without themselves undergoing any change in form.	5
77. Respiration consists of two processes: an exchange of oxygen and carbon dioxide between the lungs and the atmosphere, called external respiration; and a similar exchange between the blood and the tissues, called internal respiration.	5
78. Any failure of the body to secure sufficient air may result in mental retardation, imperfect nutrition, and, in extreme cases, asphyxiation.	5
79. Inspired air flowing over the nasal mucous membrane is warmed to body temperature, moistened, and freed of impurities.	5
80. Habitual mouth breathing endangers health and may also seriously interfere with the normal development of the teeth and jaw bone.	5
81. Respiratory diseases may result from nasal obstructions, environmental conditions, allergens, infections of various types, and certain chronic conditions.	5
82. The common cold is an acute infection of the nose or throat caused by a filterable virus which may be prolonged and complicated by a secondary invasion of the micro-organisms.	5
83. Prevention of colds depends upon proper diet, avoidance of infection, and general resistance of the body.	5
84. The most dangerous after effect of a cold or an attack of influenza is lowered body resistance to pneumonia and tuberculosis.	5
85. The skin functions in protecting the body, in regulating body temperature, in providing sensations of pressure, pain, heat, cold, and in eliminating wastes.	5
86. In addition to capillaries, lymph vessels, and nerves, the derma contains sebaceous glands, which secrete oil; sweat glands, which release perspiration; and hair follicles, or tiny tubes, from which hair grows.	5

TABLE 10—Continued

Rank	*Modal Value*
87. The health of the skin depends upon proper diet, adequate sleep, exercise, and sunshine, and upon keeping the skin clean and invigorated by frequent bathing.	5
88. The skin requires regular bathing to remove accumulated secretions, dirt, and bacteria from the openings of the many imbedded sweat glands and also to get rid of the scaly, dead epithelial cells which form on the surface.	5
89. The sweat glands of the skin form perspiration by extracting water and small quantities of urea, salt, and other substances from the blood.	5
90. Skin disorders are caused by abnormal pigmentation or outgrowths from the skin, reactions to pressure, infections of oil glands and hair follicles, fungus infections, allergens, animal parasites and other inflammations.	5
91. All sensations are received through receptors, or endings of sensory neurons, in the sense organs.	5
92. Circulation of the blood helps to keep the temperature of the body uniform.	5
93. The act of seeing involves the eyes, the visible object, the light by which the object is made visible, and the brain which interprets what is seen.	5
94. Professional persons of three types care for eye disorders: the oculist, or ophthalmologist, who is trained to measure refractive errors and to prescribe glasses; and, the optician, who is a specialist in the grinding of lenses.	5
95. Noninfectious eye disorders may be caused by eye-strain, faulty diet, accidental injury, exposure to strong sunlight or high winds, or by disease in some other part of the body.	5
96. Conditions necessary for good hearing include an open ear canal, freedom of the drum membrane and bones of the middle ear to vibrate, freedom of the auditory tube to open, receptors in condition to receive stimuli, the nerve's ability to transmit impulses, and the ability of the hearing centers in the brain to register and interpret sound.	5
97. The chief function of the teeth is to prepare foods by biting, grinding, and cutting, for the process of digestion.	5
98. Tooth decay may be caused by a variety of factors, including heredity, diet, occlusion, mineral content of water, an excess of certain bacteria in the saliva, and neglected oral hygiene.	5
99. Control of dental decay involves good nutrition in early life, daily cleansing, and periodic inspection by a dentist with cleaning and repair if necessary.	5
100. The diet of the mother before childbirth and of the growing child is an important factor in the development of sound teeth.	5

TABLE 11

PERCENTAGE OF THE 1044 PROSPECTIVE ELEMENTARY SCHOOL TEACHERS SUBSCRIBING TO EACH OF THE 130 HEALTH MISCONCEPTIONS[1]

HEALTH MISCONCEPTIONS	*Per Cent*
(1)	(2)
1. A mouthwash is healthful because it helps kills germs in the mouth and throat.	68.1
2. A blind person has a keener sense of touch and hearing because the strength normally in the eyes has gone to other sense organs to make them more acute.	63.5
3. The main purpose of a dentrifice is to kill bacteria.	57.7
4. Arch supports should be used by all people with flat feet.	55.9
5. A daily bowel movement is always necessary for good health.	53.6
6. Alcohol is a stimulant.	50.7
7. Six-year molars are replaced with second teeth.	49.6
8. Cutting or shaving a person's hair makes it grow faster and thicker.	45.3
9. Wearing bathing hats or ear plugs while swimming will insure protection for the ears.	43.5
10. The use of lanolin restores the natural oils lost as a result of washing the hair.	43.5
11. When training children one should recognize the fact that they are miniature adults and treat them accordingly.	39.3
12. Chewing on bones or hard objects strengthens the teeth.	36.6
13. It is a bad health habit to drink water while you exercise.	35.8
14. The main function of perspiring is to eliminate body poisons.	31.7
15. Application of butter is an effective treatment for burns.	31.1
16. It is necessary for optimum health to keep the windows open in the bedroom at night.	30.7
17. People with too much acid in their systems should avoid all citrus fruits.	30.6
18. Once you stop exercising, muscle changes to fat.	29.7
19. The best way to lose weight is by exercising.	28.3
20. The best thing to do when your muscles are stiff is to work the stiffness out by taking further vigorous exercise.	26.4
21. Regular vigorous exercise increases a person's resistance to infectious diseases.	26.0
22. The cause of overweight in most cases is lack of exercise.	25.7
23. There are no living germs in pasteurized milk.	25.4
24. Persons can clean their blood by eating certain foods.	24.9

[1]Borozne, Joseph, *A Determination of the Prevalence of Certain Harmful Health Misconceptions Among Freshman Prospective Elementary School Teachers Attending State Teachers Colleges in New England*, Doctorate Dissertation, School of Education, Boston University, 1957.

TABLE 11—Continued

Health Misconceptions	Per Cent
(1)	(2)
25. There are certain medicines that will prevent and cure the common cold.	24.1
26. A good way to treat frostbite is to rub the frostbitten part with snow.	23.6
27. Hot food is more nutritious than cold food.	23.5
28. The immediate treatment to be given for sprain or strain should be the immersion of the affected part in hot water.	23.3
29. A cancer can be arrested, but it can never be completely cured.	23.3
30. Overexercise is a cause of heart disease.	22.1
31. Brushing the teeth after every meal is a sure way of stopping tooth decay.	22.1
32. "Feed a cold and starve a fever" is a good health rule to follow.	22.1
33. Plenty of exercise in the fresh air is the best treatment for tuberculosis.	21.7
34. Freezing will kill all bacteria.	21.4
35. The less you eat during hot weather the less you will feel the heat.	20.6
36. A good way to help a person get rid of the hiccoughs is to frighten him.	20.6
37. Being massaged regularly is effective in weight reduction.	20.3
38. Fish is a brain food.	19.3
39. A craving for a certain food is an indication that the system needs that particular food.	18.9
40. All men are created with equal capacity for achievement.	18.2
41. Acid and alkaline foods should not be eaten together.	17.9
42. Iodine is the best treatment for infection caused by stepping on rusty nails.	17.6
43. People who are strong and healthy are sufficiently fortified against communicable diseases.	17.6
44. It is a good idea for all persons to take vitamin pills daily.	16.7
45. A pain in the lower back is generally a sign of kidney disease.	16.5
46. A pain in the right side usually means that one has appendicitis.	16.5
47. The best way to treat a black eye is to put a piece of raw meat on it.	16.0
48. Celery is a nerve tonic.	15.5
49. The healthiest people go to a doctor only when they feel sick.	15.5
50. It is a good idea to hold whiskey or aspirin on an aching tooth.	15.2

TABLE 11—Continued

Health Misconceptions	Per Cent
(1)	(2)
51. Sugar diabetes is caused by eating too many sweets.	14.6
52. Tuberculosis is inherited.	13.8
53. If you have a good tan you cannot get sunburned.	13.5
54. Slow learners remember better than the fast learners.	12.9
55. Overweight is usually due to faulty glands.	12.9
56. Every disease needs a drug or medicine for its cure.	12.8
57. Cancer is communicable.	12.4
58. A person who has mental illness lacks will power.	12.3
59. Persons who have pimples or boils usually have bad blood.	12.3
60. Because of the federal food and drug act all cosmetics are healthful to use.	12.0
61. Eating foods with plenty of vitamins will prevent tooth decay.	11.9
62. A frequent cause of heart disease is athletics.	11.9
63. People are born with their food likes and dislikes.	11.8
64. A child's natural likes and dislikes will lead him to choose a balanced diet.	11.6
65. People who do not eat meat are bound to be in poor health.	11.4
66. It has been proved that most mental sickness is inherited.	11.3
67. People should use aspirin to cure a cold.	11.1
68. It is always safe to drink water which has just been taken from a deep well or spring.	10.5
69. Brandy should be administered to revive a person who has fainted.	10.5
70. Laxatives should be used at least once a month in order to clean out accumulated body wastes.	10.3
71. The occasional use of sleeping pills without a doctor's advice is permissible.	10.3
72. To go on a diet always means to eat less food.	10.3
73. There are tooth powders that will cure pyorrhea.	9.8
74. Milk loses much of its food value through the pasteurization process.	9.2
75. Blowing the nose hard is not a harmful practice.	9.2
76. Good health does not depend upon what you eat.	8.9
77. Taking vitamin pills is the best way to get your necessary vitamins.	8.9
78. All germs are harmful.	8.7
79. Odors transmit diseases.	8.7
80. The use of tooth powders or pastes will cure one's bad breath.	8.6
81. Using a toothpick is the best way to get things from between the teeth.	8.4

TABLE 11—Continued

Health Misconceptions	*Per Cent*
(1)	(2)
82. Eating raw onions is an effective treatment for colds.	8.4
83. Wanting to eat candy and sweets is the best sign that your body needs more sugar.	8.4
84. Eating between meals causes most children to have poor health.	7.8
85. Too much study can cause feeblemindedness.	7.6
86. Diseases caused by hereditary deficiencies are communicable.	7.6
87. Eye muscle exercises will eliminate the need for glasses.	7.6
88. Drinking water with your meals is always bad for your health.	7.0
89. Mental illness usually happens suddenly.	6.8
90. Children never get ulcers.	6.3
91. Any person who sees clearly can be sure he doesn't need glasses.	6.2
92. Hard athletic training lengthens life.	6.2
93. Exercising regularly is a sure way to prevent disease.	6.2
94. All vegetables and fruits should be eaten raw.	6.2
95. It is harmful to cook foods in aluminum utensils.	5.9
96. The first and best thing to do in caring for a cold is to take a laxative.	5.7
97. Most cases of baldness can be cured if treated early.	5.7
98. Fasting periodically is necessary for good health.	5.7
99. Drinking milk while eating fish is a bad health practice.	5.4
100. The best way to brush your teeth is sideways.	5.4
101. Human nature is entirely determined by heredity.	5.1
102. Since wisdom teeth are of no value they should be extracted when they appear.	5.1
103. Give a child all the food he wants and he will never suffer from malnutrition.	4.9
104. A child needs a tonic every spring to thin the blood.	4.8
105. To cure a cold quickly one should take a hard workout followed by a hot bath.	4.6
106. A vegetarian diet is the natural and best diet.	4.3
107. Most mental sicknesses cannot be helped by treatment.	4.3
108. It is always good for your health to eat overripe fruits.	4.3
109. Wearing eyeglasses will make a person's eyes weaker.	4.1
110. Wearing sunglasses will give your eyes complete protection from the sun.	4.1
111. It is a good idea to drink wine because it builds blood.	4.1
112. Bananas should be kept out of a good diet because they are hard to digest.	3.8

TABLE 11—Continued

Health Misconceptions	Per Cent
(1)	(2)
113. The eating of carrots guarantees a good complexion and glossy hair.	3.8
114. The best way to get water out of your ears after swimming is to hold your nose and mouth closed and blow hard.	3.8
115. There are so few cases of smallpox in the United States that it is no longer necessary to be immunized against it.	3.8
116. Very intelligent children are usually weak physically.	3.8
117. Most insane persons were born insane.	2.9
118. The taste for alcohol is inherited.	2.9
119. Generally people should eat only the foods they like best.	2.7
120. A person having a stomach ache should usually take a laxative.	2.7
121. Cheese should be kept out of a good diet because it is constipating.	2.4
122. In order to transmit a disease a person must be actually sick from that disease.	2.2
123. The best way to remove pus from boils and pimples is by squeezing them with your fingers.	1.9
124. Drinking vinegar daily will keep one thin.	1.9
125. Singeing makes the hair healthy.	1.6
126. You can be sure anything a scientist says about health is true.	1.6
127. All children with heart murmurs will have heart trouble later on in life.	1.4
128. Eating meat more than once a day is harmful to most persons.	1.3
129. You don't need to worry about having tuberculosis unless you are coughing a lot.	1.1
130. It is a good idea to drink wine because doctors prescribe wine for people who are ill.	.8

BIBLIOGRAPHY

American Medical Association and National Education Association, *Healthful School Living*, Washington, 1957.

ANDERSON, C. L., *School Health Practice*. The C. V. Mosby Co., St. Louis, 1956.

BAUMGARTNER, LEONA, "School Health — Yesterday and Tomorrow." *American Journal Public Health*, Vol. 48, No. 6, June 1958.

BOROZNE, JOSEPH, *A Determination of the Prevalence of Certain Harmful Health and Safety Misconceptions Among Freshman Prospective Elementary School Teachers Attending Teachers Colleges in New England.* Doctorate Dissertation, School of Education, Boston University, 1957.

BOYD, CLIFFORD A., *A Determination of Concepts of Healthful Living and Their Relative Importance for a General Course in College Health.* Doctorate Dissertation, School of Education, Boston University, 1950.

BRAMMEL, ROY P., "Problems Confronting Elementary Teachers." *Journal of School Health*, Vol. XXVI, No. 9, November 1956.

CHENOWETH, L. B., and SELKIRK, T. K., *School Health Problems*. Appleton-Century-Crofts, Inc., New York, 1953.

DAMRON, FRAZIER C., and BOYD, CLIFFORD A., "Improving the Elementary School Health Program." *Journal of School Health*, Vol. XXVII, No. 1, January 1957.

DUNBAR, FLANDERS, *Mind and Body: Psychosomatic Medicine*. Random House, New York, 1955.

DZENOWAGIS, JOSEPH G., *A Determination of the Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade School Children.* Doctorate Dissertation, School of Education, Boston University, 1953.

DZENOWAGIS, JOSEPH G., and IRWIN, LESLIE W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Fifth- and Sixth-Grade Children." *Research Quarterly*, Vol. 25, No. 2, May 1954.

DZENOWAGIS, JOSEPH G., MCPHERSON, PATRICIA V., and IRWIN, LESLIE W., "Harmful Health and Safety Misconceptions of a Group of Tenth-Grade Girls." *Journal of School Health*, Vol. XXIV, No. 9, November 1954.

DZENOWAGIS, JOSEPH G., BOROZNE, JOSEPH, and IRWIN, LESLIE W., "Prevalence of Certain Harmful Health and Safety Misconceptions Among Prospective Elementary Teachers." *Research Quarterly*, Vol. 26, No. 1, March 1955.

FIKES, JAMES A., "Health Knowledge of Teachers." *Journal of School Health*, Vol. XXVII, No. 9, November 1957.

FLORIO, A. E., and STAFFORD, GEORGE T., *Safety Education*, McGraw-Hill, Inc., New York, 1956.

GROUT, RUTH E., *Health Teaching in Schools*. W. B. Saunders Co., Philadelphia, 1958.

HAAG, JESSIE H., *School Health Programs*. Henry Holt & Co., New York, 1958.

HARTNETT, ARTHUR L., and SHAW, JOHN H., *Effective School Health Education*. Appleton-Century-Crofts, Inc., New York, 1959.

HICKS, DORA A., "Scope of Health Instruction, Grades 1 to 12." *Journal of School Health*, Vol. XXIII, No. 6, June 1953.

HIGGINS, RUTH, "Accident Reports: Foundation for the School Safety Program." *Safety Education*, Vol. XXXVII, No. 2, October 1957.

HILL, PATRICIA J., "Unmet Needs in Teacher Education for Health," *Journal of Health, Physical Education and Recreation*. Vol. 25, No. 1, January 1954.

IRWIN, LESLIE W., HUMPHRY, JAMES H., and JOHNSON, WARREN R., *Methods and Materials in School Health Education*, The C. V. Mosby Co., St. Louis, 1956.

IRWIN, LESLIE W., *The Curriculum in Health and Physical Education*. The C. V. Mosby Co., St. Louis, 1951.

IRWIN, LESLIE W., "The Importance and Place of Health Instruction in the School Program." American Council on Education Studies: A Report of the Sixteenth Educational Conference, Series I, No. 53, Vol. XVI, April 1952.

IRWIN, LESLIE W., MERRILL, CHARLES D., and STATON, WESLEY M., "Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Elementary School Level." *Research Quarterly*, Vol. 24, No. 4, December 1953.

IRWIN, LESLIE W., and STATON, WESLEY M., "A Determination of Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Secondary School Level." *Research Quarterly*, Vol. 22, No. 1, March 1951.

IRWIN, LESLIE W., and BOYD, CLIFFORD A., "A Determination of Concepts of Healthful Living and Their Relative Importance for a General Education Course in College Health. *Research Quarterly*, Vol. 23, No. 2, May 1952.

IRWIN, LESLIE W., "Analysis and Consideration of the Controversy Regarding the Responsibility for School Health Education." *Education*, October 1949.

IRWIN, LESLIE W., "The Need for Reform in Teacher Liability for Student Injuries." *The Physical Educator*, Vol. II, No. 1, October 1941.

KNUTSON, ANDIE L., "Evaluation Progress in Health Education." *Journal of Health, Physical Education and Recreation*, Vol. 28, No. 5, May 1957.

LAIRD, DOROTHY C., "How Effective Is Classroom Instruction in Safety?" *Journal of School Health*, Vol. XXVIII, No. 2, February 1958.

LEONARD, VICTOR E., "Start Them Young." *Safety Education*, Vol. XXXV, No. 7, March 1956.

MERRILL, CHARLES D., *A Determination of the Concepts of Healthful Living Which are of Functional Value in Contributing to the General Education of Elementary School Pupils*. Doctorate Dissertation, School of Education, Boston University, 1949.

MILES, JAMES B., "The School Principal and Accident Prevention." *Safety Education*, Vol. XXXVI, No. 6, February 1957.

MILLER, WARD I., "What To Do About Problems Confronting Elementary Teachers in Dealing with Health Instruction." *Journal of School Health*, Vol. XXVII, No. 7, September 1957.

MEREDITH, FLORENCE L., IRWIN, LESLIE W., and STATON, WESLEY M., *Health and Fitness.* D. C. Heath Co., Boston, 1957.

National Safety Council, *Accident Facts* (current yearly edition), Chicago.

NEILSEN, ELIZABETH, and IRWIN, LESLIE W., "An Analytical Study of School Health Service Practices in the United States." *Research Quarterly*, Vol. 29, No. 4, December 1958.

OBERTEUFFER, DELBERT, *School Health Education.* Harper & Bros., New York, 1954.

RASH, J. K., "Scheduling and Sequence of Health Instruction, Grades 1 to 12." *Journal of School Health*, Vol. XXIV, No. 5, May 1954.

ROSENFIELD, HARRY N., "Legal Liability and Cost of Accidents." *Safety Education*, Vol. XXXVI, No. 8, April 1957.

SHAW, JOHN H., "Evaluation of the School Health Instruction Program." *American Journal of Public Health*, Vol. 47, No. 5, May 1957.

STACK, HERBERT J., and ELKOW, DUKE J., *Education for Safe Living.* Prentice-Hall, Inc., New York, 1957.

STARR, HELEN M., "Today's Pupil — Health Informed or Health Educated." *Journal of Health, Physical Education and Recreation*, Vol. 25, No. 7, September 1954.

STATON, WESLEY M., *A Determination of Fundamental Concepts of Healthful Living and Their Relative Importance for General Education at the Secondary School Level.* Doctorate Dissertation, School of Education, Boston University, 1948.

STREIT, W. K., "Health Education from Kindergarten Through High School." *Journal of School Health*, Vol. XXIV, No. 9, November 1954.

TURNER, CLAIR E., "Status of Health Education, National and International." *Journal of School Health*, Vol. XXVII, No. 5, May 1957.

TURNER, C. E., SELLERY, MORLEY C., and SMITH, LOUISE S., *School Health and Health Education.* The C. V. Mosby Co., St. Louis, 1957.

WHEELER, HUBERT, "The School's Part in Safety for State and Nation." *Safety Education*, Vol. XXXVI, No. 3, December 1956.

WILLGOOSE, CARL E., *Health Education in the Elementary School.* W. B. Saunders Co., Philadelphia, 1959.

ZAHN, WILLARD D., "What Is A Good Safety Program?" *Safety Education*, Vol. XXXVI, No. 9, May 1957.

NEXT ISSUE

October, 1959. The next issue will deal with the enriching of the elementary school mathematics program for more capable children and will be authored by J. Fred Weaver and Cleo S. Brawley. Postpaid $1.00.

PREVIOUS NUMBERS AVAILABLE

February, 1959. ***Visual Handicaps to Reading*** **by Thomas H. Eames. Postpaid $1.00.**

December, 1958. ***Today's Forecast for Science Education Tomorrow,*** **edited by John J. Read and Pearl A. Nelson. Postpaid $1.00.**

October, 1958. ***Various Conceptions of the Role of the Educational Philosopher,*** **edited by Gene D. Phillips. Postpaid, $1.00.**

An expression of the concern of the educational philosopher for relating his particular discipline to the total affairs of the educational process.

April, 1958. ***Preference Studies in Elementary Social Studies*** **by W. Linwood Chase and Gilbert M. Wilson.**

A report of research at Boston University showing the status of social studies in the subject preferences of more than thirty thousand fifth grade children in 1948 and 1957; and preference studies in activities and contents at different grade levels carried on in New England elementary schools.

February, 1958. ***Success in First Grade Reading,*** **edited by Donald D. Durrell. Postpaid $1.00**

The results of a program to assure reading success among two thousand first grade children.

December, 1957. ***The Spontaneous Speaking Vocabulary of Children in Primary Grades*** **by Helen A. Murphy. Postpaid, $1.00.**

The vocabulary is presented by grades — kindergarten, grades one, two and three with frequency at each level.

October, 1957. ***Television for Children*** **by Ralph Garry and Others. Postpaid, $1.00.**

Television for Children presents in admirably brief form the judgment of qualified people who have engaged in serious deliberation about television for children.

April, 1957. ***Guidance for the Classroom Teacher*** **by Dugald S. Arbuckle. Postpaid, $1.00.**

Concerned with the teacher's specific functions in the testing and group work aspects of an over-all guidance program.

February, 1957. ***Can We Help Children to Write?*** **by B. Alice Crossley. Postpaid, $1.00.**

December, 1956. ***High Interest-Low Vocabulary Reading Materials*** **(a selected booklist) by Helen Blair Sullivan and Lorraine E. Tolman. Postpaid, $1.00.**

April, 1956. ***Forecasting Juvenile Delinquency*** **by William C. Kvaraceus. Postpaid, $1.00.**

February, 1956. ***Classroom Enrichment Through Pupil Specialties*** **by Donald D. Durrell and Leonard J. Savignano. Postpaid, $1.00.**

December, 1955. ***Adjusting to Individual Differences in English*** **by Olive S. Niles and Margaret J. Early. Postpaid, $1.00.**

NEXT ISSUE

February, 1959. *Visual Handicaps to Reading*, by Thomas H. Eames. Postpaid, $1.00.

A summary of the author's comparative studies of eye and visual handicaps among 1,750 reading failures and 1,750 unselected pupils, together with a discussion of each of the handicapping conditions.

PREVIOUS NUMBERS AVAILABLE

October, 1958. *Various Conceptions of the Role of the Educational Philosopher*, edited by Gene D. Phillips. Postpaid, $1.00

An expression of the concern of the educational philosopher for relating his particular discipline to the total affairs of the educational process.

April, 1958. *Preference Studies in Elementary Social Studies* by W. Linwood Chase and Gilbert M. Wilson.

A report of research at Boston University showing the status of social studies in the subject preferences of more than thirty thousand fifth grade children in 1948 and 1957; and preference studies in activities and contents at different grade levels carried on in New England elementary schools.

February, 1958. *Success in First Grade Reading, edited by* Donald D. Durrell. Postpaid $1.00

The results of a program to assure reading success among two thousand first grade children.

December, 1957. *The Spontaneous Speaking Vocabulary of Children in Primary Grades* by Helen A. Murphy. Postpaid, $1.00.

The vocabulary is presented by grades — kindergarten, grades one, two and three with frequency at each level.

October, 1957. *Television for Children* by Ralph Garry and Others. Postpaid, $1.00.

Television for Children presents in admirably brief form the judgment of qualified people who have engaged in serious deliberation about television for children.

April, 1957. *Guidance for the Classroom Teacher* by Dugald S. Arbuckle. Postpaid, $1.00.

Concerned with the teacher's specific functions in the testing and group work aspects of an over-all guidance program.

February, 1957. *Can We Help Children to Write?* by B. Alice Crossley. Postpaid, $1.00.

A discussion of techniques for helping children to write, beginning with the transition from oral to written work at the primary level.

December, 1956. *High Interest-Low Vocabulary Reading Materials* (a selected booklist) by Helen Blair Sullivan and Lorraine E. Tolman. Postpaid, $1.00.

April, 1956. *Forecasting Juvenile Delinquency* by William C. Kvaraceus. Postpaid, $1.00.

February, 1956. *Classroom Enrichment Through Pupil Specialties* by Donald D. Durrell and Leonard J. Savignano. Postpaid, $1.00.

December, 1955. *Adjusting to Individual Differences in English* by Olive S. Niles and Margaret J. Early. Postpaid, $1.00.